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Agriculture not only gives riches to a nation, but the only riches she can call her own.—Dr. Johnson.

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INDEX.

A.

Agriculture, A Board of, 246
Agriculture and Agricultural Statistics, 478
Agriculture, Calendar of, 77, 167, 260, 351, 443, 541
Agriculture in Essex, 504
Agriculture in 1866, 464
Agriculture, The Friends and Foes of, 201
Agriculture, The Future of, 479
Agricultural Geology, 308
Agricultural Implement Trade of Canada, 110
Agricultural Implements, 112
Agricultural Intelligence, 79, 170, 262, 355, 449, 536
Agricultural Labourers and Servants, 399
Agricultural Practice and Prospects in Scotland, 520
Agricultural Reports, 78, 168, 261, 354, 448, 534
AGRICULTURAL SOCIETIES—
  Abergavenny, 439
  Bath and West of England, 31, 60, 430
  Bridlington, 230
  Cambridge and Isle of Ely, 332
  Cleveland, 280
  Derbyshire, 282
  Driffield, 257
  Easingwold, 336
  East Cumberland, 281
  Essex, 90
  Hants and Berks, 66
  Highland and Agricultural Society of England, 61
  Huntingdon, 413
  Leicester and Waltham, 436
  Leslie, 185
  Marlborough, 259
  Market Drayton, 338
  Northumberland, 229
  Pontefract, 231
  Queen's County, 344
  Royal Agricultural Society of England, 47, 136, 193, 518
  Royal Agricultural Society of Ireland, 43
  Royal Bucks, 278
  Suffolk, 120
  Weatherby, 279
  Whitby, 337
  Yorkshire, 158, 232
Agricultural Statistics, 228
Amateur Farming, 369
America, Things in, 506
Animal Food, Our Foreign Supplies of, 245
Animals, The Trade in, 194
Artificial Food, The Use of, 529
Artificial Manures, and Seasons for Application, 186
Australia, Agricultural Progress in, 101
Autumn Cleaning and Culture, 423
Autumn Cleaning of Stubbles, 277
Averages, Comparative, 83, 176, 269, 361, 454, 544
Averages, Imperial, 83, 176, 267, 361, 453, 544
Aylmer's, Mr. Hugh, Shorthorn Herd, 302

B.

Bark, Price of, 546
Bees, 151
Berkshire Pigs—Description of Plate, 270
Birmingham Horse Show, 142
Braxy in Sheep, 525
Breeding, Principles of, 488
Butcher Trade, New, and its Advantages, 111
Butter, 326
Butter and Cheese Markets, 84, 176, 264, 358, 451, 545

C.

Cabbages for Spring Feeding, 500
Calves, A Substitute for the Finger-feeding of, 127
Canadian Agriculture, 492
Carcase Trade, The, 20
Caslon's Letter Foundry, Anniversary Dinner of, 190
Cattle, Diseases of; by Professor Simonds, 404
Cattle, Early Maturity in, 23
Cattle-feeder, The Experience of a, 25
Cattle Plague and Cholera, 487
Cattle Plague, The; by C. W. Johnson, F.R.S., 2
Cattle Rate Assessment Bill, 75
Cattle, Regulations for the Sale of, 491
CATTLE SALES—
  Ballywalter Shorthorns, 447
  Biscathorpe Ram Lettings, 345
  Churchill Yearlings, 161
  Duke of Hamilton's Stock, 537
  Exmoor Ponies, 531
  General Angerstein's Stud, 160
  Middle Park Yearlings, 72, 161
  Rigden's, Mr., Sheep, 350
  Salter's, Messrs., Rams, 346
  September Sales, Various, 346
  Shorthorns, 349
  Shropshire Sheep, 254
  Stow Herefords, &c., 538
  Thurlby Grange, at, 346
  Various Sheep Sales, 255
  Yardley, at, 349
Cattle, The Removal of, 428
Cattle Trade, Review of the, 78, 168, 261, 354, 535
Cereals, Dressings for; by C. W. Johnson, F.R.S., 456
Cheese Factory in Ohio, 205
Cheese Show at Kilmarnock, 538
Chicory, Price of, 362
Chips, 285
Clergy, The, and the Labourer, 400
Clover Hay, The Making of, 133, 192
Coal, Food, and Population in 1966, 252, 327
Colts rubbing their Tails, 150
Compost Heaps, 307
Corn Stacks, The Way to Ventilate, 387
Corn Trade, Review of the, 81, 174, 265, 359, 452, 542
Covent Garden Market, 268, 362, 545
Cumberland Shorthorns, 493
Current Prices in Mark-lane, 83, 176, 267, 361, 544

D.

Dairy Farm, an American, 134
Dairy Farming, Hints on, 382
Dairy, Hints for the, 251
Dead Meat Trade of the London Corporation, 109
Deer *v.* Sheep, 401
Disease between Man and Animals, Interchange of, 482
Disinfection and Disinfectants, 384
Disraeli, Mr., at Home, 335

E.

Earthworms, 189
Economical Science and Statistics, 297
Eggs, 95
English Peasant's Cottage, and its Tenants, 192
Essex Cottages, Artistic Features in the, 242
Ewe and Lamb at Feeding Time, 328
Experience, Capital, and Security, 475

F.

Facts and Figures from the United States, 324
Farm Profits, 74
Farm Servants' Movement, 100
Farmyard Manure, The Profitable Application of, 249
Farmer, The, 256
FARMERS' CLUBS—
  Ballymahon, 200, 370
  Central, 506
  Cirencester, 137
  Enniscorthy, 435
  Galashiels, 104, 249
  Logie and Lecroft, 29, 130, 213
  Maidstone, 114
  Midland, 63, 399
  Morayshire, 520
  Pembrokeshire, 96
  Wenlock, 374
Farmers' Clubs, Questions for Discussion at, 377
Farmers, Figures for, 145
Farmers of Progress, 476
Farming, High, and Good Employment, 209
Farming in Essex, 429
Faversham, The Plough Trials at, 530
Fences, Management of, 374
Filly—Description of Plate, 85
Filtration and Cattle Troughs, 274
Finger-and-toe, Another Theory as to the, 283
Fish as Food, 314
Flax and Linseed, 95
Flax Crop, Proper Management of the, 247, 435
Flax, Price of, 358, 362, 546
Foreign Agriculture, 227
Foreign Agricultural Gossip, 73, 164, 258, 352, 445, 540
Foreign Cattle Trade, 226
Free Trade and the Steam Plough, 284

G.

Game fed by a Tenant-farmer; by C. W. Johnson, F.R.S., 178
Game Laws, their Effect on Agriculture, 130
Game Preservation, 166
Game Question, The, 155, 344
Gardening, Calendar of, 77, 167, 260, 351, 443, 541
Grain Drying Artificially, 522
Grass Lands, 96
Green Manuring: Clover Hay, 330
Gypsum in Stables, 386

H.

Hares and Rabbits: Bill to allow Farmers to Kill, 159
Harvest of Every Year, 216, 388
Harvesting Corn, 181, 275, 276, 532
Hay, Clover, and Lucerne; German Way of Saving, 184
Hay Markets, 545
Hay, the Science of Making, 299
Hay, Timothy, Time to Cut, 207
Hedging, Notes on, 470
Herds of Great Britain, 459
Hide and Skin Markets, 362
High Farming and the Employment of Labour, 158
Hop Crop and the Importations, 341
Hop Markets, 83, 176, 267, 361, 451, 544
Hops, the Growth of, 114
Hornets' Nests, 30
Horse-breeding and Selling by Farmers, 290
Horse, The, 292
Horses: Scotch *v.* English Draught, 319

I.

Ice-houses, Ice-safes, Vapour-safes, and Refrigerators, 210
Impolicy of Inaction, 70
Insurance for Live Stock, 71
Ireland, High-farming for, 182
Ireland, Waste Lands in, 188
Irish Agricultural Statistics, 387
Irish Great National Horse Show, 440
Irish Land Question, 372, 416
Italian Ray Grass, 125

L.

Labour Question, The, 367, 431
Labourer, The, and his Prospects, 378
Labourer's Association, Proposal for a, 153
Labourer's Cottage: Mr. Henley at Thame, 334
Labourer's Cottage and Education, 368
Labourers' Education; A Farmers' Notion on, 72
Labourer's Home, The, 340
Labourer's Lodgings and Wages, 480
Labourer's Wages, 502
Lambs, Mortality Amongst, 99
Land Drainage and Water Supply, 63
Landlord and Tenant (Ireland) Bill, 75
Landlord's Capital, 140
Leather Market, 268
LEGAL.—Warranty of Cattle: Mullet *v.* Mason, 69, 253
  Act of Husbandry by an Outgoing Tenant, Law *v.* Morall, 253
Lifford Estate Farming Society, 447
Lincoln Sheep, 22
London Averages, 361, 544
Long-wool Ram—Description of Plate, 456

M.

Machinery, its Application to the Farm, 317
Machinery to Agriculture, The Application of, 213
Malt-tax, Repeal Agitation, Progress of the, 113
Malt-tax, Labour Market, and the Harvest, 494
Mangel-wurzel, How to Harvest, 103, 499
Manual Labour and its Relations to Agriculture, 526
Manure, 129
Manure-pit, The, 414
Manures, Price of, 268, 362, 454, 546
Mare "Crafty—Description of Plate, 269
Meat, High Price of Butcher's, 17
Meat Manufactures, 206
Meat, The Supply to Large Towns, 47
Meat Trade and the Warm Weather, 156
Metropolitan Cattle Market, 67
Michaelmas Rents and Corn Averages, 501
Milch Cows, Effects of Good Feed on, 409
Milk, A Fact about, 303
Milk Fever in Cows, 462
Mills and Milling, 294, 410
Monmouthshire Farming, 496
Mowers, Trial of, 158

N.

Nails, Nuts, Screws, and Bolts, 481
New Zealand, The Agriculture of, 19

O.

Oats, The Cultivation of, 147
Obituary—
  Charles Stokes, 163
  J. Hall Maxwell, 315
  Richard Garrett, 162
  Thomas Raymond Barker, 163
  William Fisher Hobbs, 433, 444
Oilcakes, The Value of, 376
Oil Market, 545
On the Rein—Description of Plate, 177
Opinions v. Experiments, 342
Ox—Description of Plate, 1

P.

Paris Exhibition, 441
Peat as a Manure; Value of Humus, 329
Peterborough Horse Show, 438
Pigs, 245
Pigs, Taking Young Ones from a Sow when she Litters, 208
Pigs, The Breeding and Rearing of, 484
Ploughing, Advantages of Early, 370
Ploughing and Potatoes, on, 331
Ploughing, Her Majesty's Prize for, 408
Poetry—
  Kitchen Hippics, 161
  The Bakewell Sheep, 373
Potato Crop, The, 18
Potato Markets, 84, 267, 358, 454, 545
Potatoes, 147
Potatoes, On Raising, under Straw, 225
Poultry and Eggs, 486
Poultry Farm-yard, Profits and Management; by John Algernon Clarke, 418
Prizes for Well-cultivated farms, 498
Prize Pigs—Description of Plate, 85

R.

Rainbow—Description of Plate, 455
Ram Sales, On the Recent, 415
Reapers, The Trial at Yorkshire Show, 241
Reaping and Reapers, 89
Reaping Machines, Trials at Peterborough, 238
Reform Movement and Counties' Representation, 474
Review—Farmers' Almanac, 539
Rinderpest and its Contradictions, 409
Rinderpest in Sheep, 98
Road Reform in Scotland, 468
Romney Marsh, 15
Roots, Lifting and Storing, 500
Roots, Pulped for Stock, 523
Roup, Cure for, 432
Royal Agricultural Benevolent Institution, 76
Royal Agricultural Society's Journal, The New Number of, 434
Rushes, A Rush through the—Description of Plate, 2

S.

Scotland, Agricultural Matters in, 185
Seeds, Price of, 267, 361, 454, 544
Seeds, The Adulteration of, 152
Sewage, Inquiry into the Utilization of, 320
Sewage Farming in the Light of the Present Age, 322
Sewage, Fertilizing Properties of, 304
Sewage of Towns, 471
Sheep Farming in South Africa, 135
Sheep for Various Soils, 29
Sheep-marking, 127
Sheep, Smearing and Dipping of, 490
Sheep v. Cattle, 7, 154
Sheep-watering in Fold-yards, 461
Shorthorn Cow—Description of Plate, 177
Shorthorn Heifer—Description of Plate, 363
Smithfield Club, 539
Soiling Cattle, 215
Spanish Agriculture, 119
Statistics connected with Agriculture, 307
Steam Cultivation, Rise and Progress of, 316
Steam-engine on the Farm, The, 289
Steam-plough in Kincardineshire, 440
Steam-plough, The, 137
Stock; are the Present High Prices likely to Continue? 104
Stock, Dr. Hitchen on the Breeding of, 198
Stunting Cattle, 126
Suffolk, Agricultural Matters in, 524
Sugar Cultivation in England, 191
Summer Prospects and Agricultural Doings, 68

T.

Tape-worm in Cattle, The Prevalence of, 300, 426
Tare or Vetch; its Use and Cultivation, 13
Tenant-right in Ulster, 128
Textless Notes; by a Crotchety Farmer, 148, 379
The Mountain Dew—Description of Plate, 363
Thin Sowing, On, 244
Things a Farmer should not do, 199
Thistles, On the Extirpation of, 3, 132, 350
Thorough Culture, 159
Tillage, 497
Timber, Price of, 268, 362, 546

V.

Vaccination for Rinderpest; Russian Experiments for, 196

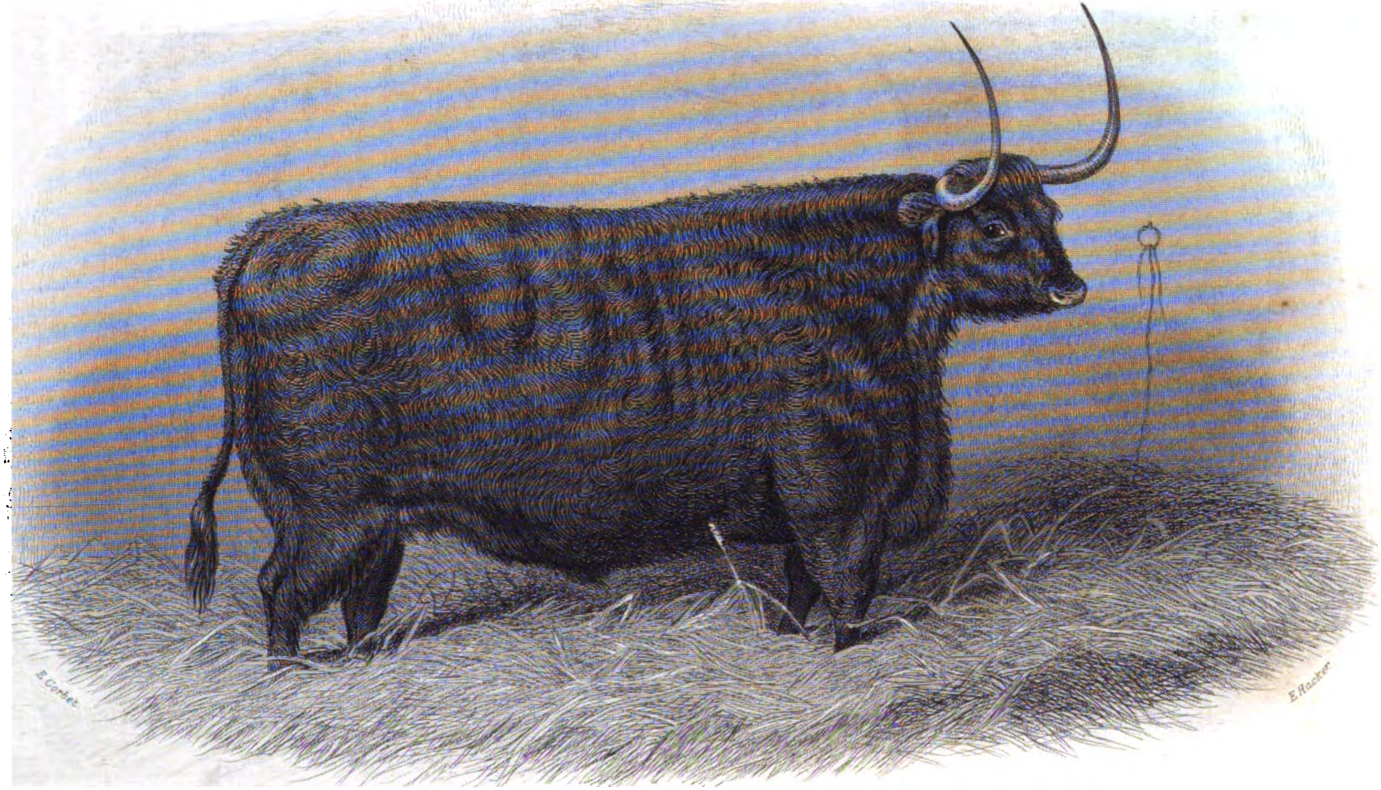
W.

Water, Good: The Supply to Towns of; by C. W. Johnson, F.R.S., 271
Water, The Impurities of our Drainage; by C. W. Johnson, F.R.S., 86
Way the Wind Blows, 529
Wheat, a Peck per Acre, 151, 533
Wheat-growing in Kentucky, 339
Wheat, its Culture in America, 412
Wheat Question of 1866, 402
Wheat-sowing; by C. W. Johnson, F.R.S., 364
Women: What Can they Do? 477
Wood.ashes, The Value of, 433
Woods and Forests, 417
Wool Markets and Fairs, 84, 172, 264, 362, 454, 546.

THE EMBELLISHMENTS.

	Page.
West Highland Ox	1
A Rush through the Rushes	1
"Repulse," a Thoroughbred Filly	85
Prize Pigs	85
Root-extractor for Mangolds	103
India-rubber Teat for feeding Calves	127
A Shorthorn Cow	177
On the Rein	177
Plan of saving Clover-hay, &c., in Germany	184
Berkshire Pigs	269
A Hackney Mare	269
The Mountain Dew	363
A Shorthorn Heifer	363
Ventilators for Corn-stacks	387
Prize Longwool Ram	455
Rainbow	455

51



E. Corbet

E. Hacker

A West Highland Cow.

The property of the Duke of Sutherland and the winner of the Silver Cup as the best Scotch Ox or Cow of any of the Classes at the Smithfield Club Show, December 1865.

London, Published by Rogerson & Tuxford, 246, Strand, 1866.

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PLATE I.

A WEST HIGHLAND OX.

THE PROPERTY OF THE DUKE OF SUTHERLAND, OF DUNROBIN MAINS, GOLSPIE, SUTHERLANDSHIRE.

This ox, bred by Dr. Gillivray, of Barrd, was five years and eight months old when sent to the Smithfield Club Show last Christmas, where he took the first prize of £30 as the best beast of his class, and the Silver Cup of £40 as the best ox or steer in the show. As we wrote of him at the time, the Duke's ox is not the best Highlander we ever saw, if perhaps one of the very best that has come out of late years. Size and symmetry, with wonderful depth through the heart, and famously let down in his flanks and thighs, a sweet head, a noble eye, and well-carried horns, with a red-brindled coat of just the right hue, were the points which, for the first time on record, secured the chief honour for a beast of this breed. The Duke's ox, however, was somewhat wanting in the proper expansion of the fore-quarter and rib, while he was terribly loose in his touch, and the award consequently anything but one way. The two sets of Judges, in fact, divided over the merits of the Highlander and the Prince of Wales's Devon, and it was not until Mr. Sanday had been called in that a decision was arrived at, and this, it is only fair to add, was by no means supported by the public generally.

"The Kyloes or West Highland cattle," says Mr. Wilson, of Edington Mains, "are widely diffused over the Highlands of Scotland; but are found in the greatest perfection in the larger Hebrides. Well-bred oxen of this breed, when of mature growth and in good condition, exhibit a symmetry of form and noble bearing which are unequalled by any cattle in the kingdom. Although somewhat slow in arriving at maturity, they are contented with the coarsest fare, and ultimately get fat, where the daintier Shorthorns could barely exist. Their hardy constitution, thick mellow hide, and shaggy coat, peculiarly adapt them for a cold humid climate and coarse pasturage. Fewer of these cattle are now reared in the Highlands than formerly, owing to the lesser number of cottars and small tenants, and the extension of sheep husbandry. Large herds of cows are, however, kept on such portions of farms as are unsuited for sheep-walk. The milk of these cows is very rich; but, as they yield it in small quantity and go soon dry, they are unsuited for the dairy, and are kept almost solely for the purpose of suckling each her own calf. The calves are generally housed during their first winter, but after that they shift for themselves out of doors all the year round. Vast droves of these cattle are annually transferred to the lowlands, where they are in request for their serviceableness in consuming profitably the produce of coarse pastures and the leavings of daintier stock. Those of a dun or tawny colour are often selected for grazing in the parks of the aristocracy, where they look quite as picturesque as the deer with which they are associated. Indeed, they strikingly resemble the so-called wild cattle that are carefully preserved in the parks of several of our nobility, and, like them, are probably the descendants of the cattle of the ancient Britons."

A fine herd of West Highlanders has long been maintained by the Dukes of Sutherland, at Dunrobin.

PLATE II.

A RUSH THROUGH THE RUSHES.

A jack on the feed will be recognised and appreciated by every one who has looked over stream or lake when the tyrant of the fresh waters is ready for a snack. See, he makes a sudden foray amongst a shoal, and out of their native element go the whole finny tribe to avoid the rapacious jaws of their ruthless destroyer. But mark the instinct of the smaller fish: they throw themselves with a summersault-like spring, 'and in an acrobatish fashion, which tends to bring their bodies behind their pursuer, and thus he will have to curb the velocity of his progress through the water before he can turn, and again repursue his prey. By this exercise of tact most of the shoal will escape; but that aldermanic gentleman, who has doubtless been stuffing to repletion upon a mixture of greaves and carrion gentles from the hands of some patient bottom fisher, has but a small chance in his plethoric unwieldiness to get away from that fine set of inward-directed teeth. Indeed, the look of the pike in the engraving, from the tip of his under-jaw to the end of his tail, is all certainty, and the eye has already anticipated the treat in store for the stomach. If ever the fate of fish was decided, it is that of the helpless wretch, but now over the expectant mouth of the hungry villain beneath it. Can you not hear the snap of his formidable mandibles?—see the half-pounder crosswise, secured as between a couple of devilish calipers, and before the monster has scarcely disappeared in the deeps, perceive the head of the victim cunningly turned belly-ward, and rapidly on its road to its living tomb?

The incident thus pictorially rendered is, however, in the matter of the flying fish, as but an episode to that which occurs when a pike is first struck by the angler, and makes a dash across river or mere, more particularly if the water be shallow. Then, what a host of small fry dash upwards for dear life! and the track of the brute can be only known in its swiftness by this silver shower, which indicates the exact course he has taken. Many a large pike owes his death to this infallible hint alone; for it is sometimes half the battle to know where a desperate fish has gone to, especially where weeds and snags are dominant.

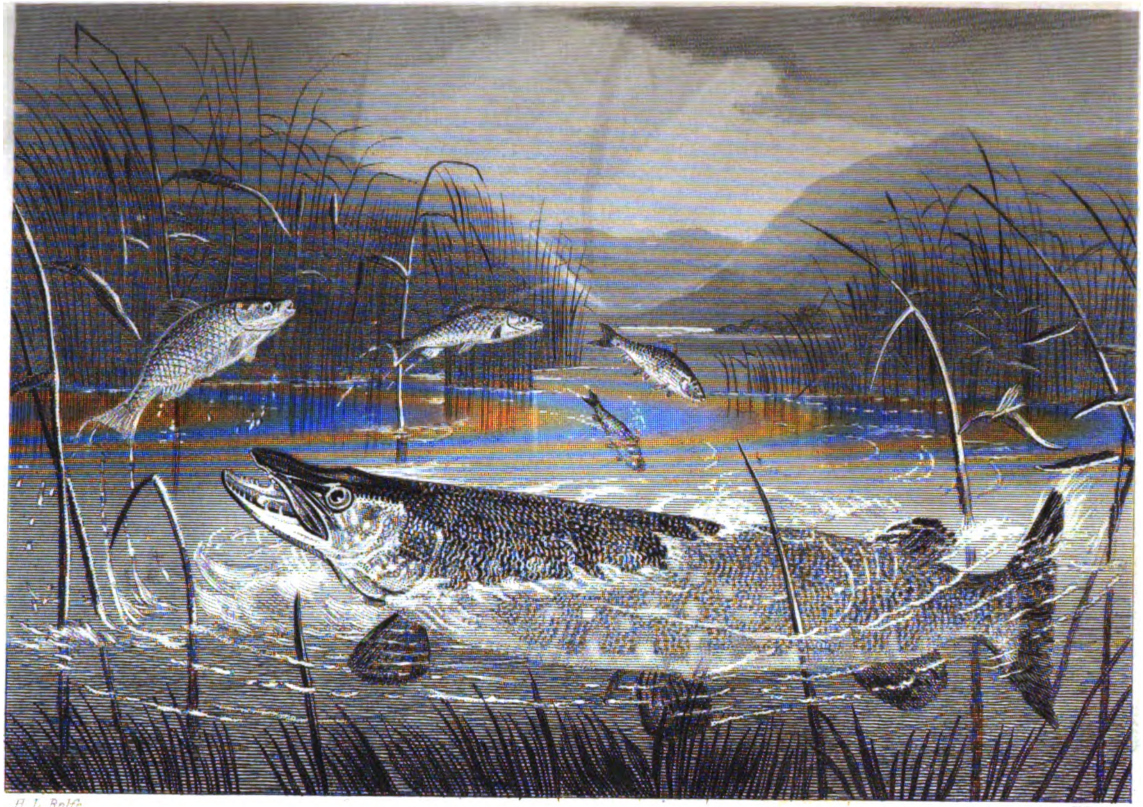
This picture is, moreover, suggestive of a fact that has not been treated upon even by naturalists as it deserves, but which there is little doubt is a large consideration in the economy of nature, more particularly in its application to fish that feed upon their own species. The young, the healthy, and the active have the largest chance awarded to them of an escape from destruction; while the sickly and the old are more likely, if actual size does not protect them, to fall to the sacrifice. Indeed, a fish in perfect fettle is not altogether so acceptable to the pike tribe as one slightly indisposed—that an invalid roach or a convalescent gudgeon has more charms for master jack than the hale and robust. That there is a wise order in this arrangement will be at once recognised. Fish, if allowed to die and decay, would add to the impurities of the very element from which the scavenger derives both his existence and his comfort; and then, it may be, the cowardly tyrant experiences a greater *goût* in the destruction of those who cannot help themselves, like many another bully in a different element one might name.

THE CATTLE PLAGUE.

BY CUTHBERT W. JOHNSON, F.R.S.

When pestilence is ravaging our herds (although happily, at the time I am writing, with diminished force), we may, perhaps, usefully collect together some of the leading facts with regard to the present as well as the former visitations of this fatal disorder. Its origin and symptoms are naturally the first portions of the inquiry.

The cattle plague, then, is described by Professor Gamgee in his elaborate work as " constantly pervading Russia, and especially steppe lands, being a specific, malignant, and highly-contagious fever, known to us only as the result of direct or indirect communication from sick to healthy animals. It is entirely *sui generis*, and never originates spontaneously beyond the Russian frontiers, within which it is probably never generated *de novo*, but is kept up by constant reproduction after the manner of other contagious maladies. It is essentially a bovine disease, though it may be communicated to goats, sheep, &c.—never, however, attacking any animal more than once. It is characterized by a period of incubation, which does not exceed ten days; by fever heat, which precedes all other symptoms; redness of all the mucous membranes, seen early, and in a marked manner, in the vagina of cows; sometimes delirium, muscular twitchings, and fever shivers; discharges from the eyes and nose; normal secretions checked or suppressed; abdominal pain, with constipation, or diarrhœa; scaly eruption on the back and loins, and a characteristic eruption on the inside of the thighs and on the mammæ. There is a tendency to early putrefaction, manifested by the fœtor of the breath, and discharges and emphysematous swellings in various parts of the body before death: after death rapid decomposition sets in. The majority of the cattle seized with the plague, as a rule, die wherever the disease appears, except amongst Russian herds. No specific antidote has been discovered for its poison. And, as her Majesty's Commissioners, who have recently reported on the plague, add—" that the disease is contagious, that the contagion is extraordinarily swift and subtle, and that it is most


H. L. Rolfe.
E. Hacker.

A rush through the rushes.

London, Published by Rogerson & Tuxford, 246, Strand, 1856.

destructive in its effects, there can be no doubt whatever. The manner in which it has spread, travelling perceptibly for the most part in the track of animals brought from some centre of infection, and establishing a new centre wherever it has been suffered to effect a lodgment—the very difficulty that has often been found, even where the fact of infection was certain, in tracing the exact means by which the infection was conveyed—the havoc it has made in open pastures not less than in the London cow-sheds, and against which fresh air, wholesome food, and careful tending seem to have afforded no defence, would be quite enough to establish these conclusions, even if no light were thrown upon them by past history or the experience of other countries. The witnesses examined by the Commissioners, even those who believe it to have been spontaneously generated here, acknowledge it to be contagious, and (with hardly an exception) admit that it is new in England."

It is not the first time by several that this disorder has spread destruction amid our herds. We find old Hollingshead in his chronicles noticing such a visitation more than five centuries since. In more recent periods it was in England about the year 1718. In this case its course seemed to be similar to that of the present time, viz., travelling to us from eastern Europe. It made its appearance in Hungary about the year 1710, thence it progressed by Dalmatia and the states of Venice, throughout Italy. Then crossing the Alps, it penetrated by the Tyrol through Germany; from the German States it passed into Denmark, Sweden, and England. Years elapsed before it disappeared. It showed itself again in 1730; it reappeared then, however, with less violence than on previous occasions. In 1740, however, it again made its appearance in south-eastern Europe, and gradually crossing the Continent, spread once more its baneful influence amid our herds. It is now that we obtain a clear description of the disease, and the regulations which were then enforced to stay its progress, and the attempts that were made to discover a cure. The history of that visitation, more than a century since, curiously harmonizes with that of the present time. Lord Cathcart on a recent occasion collected, chiefly from the pages of the *Gentleman's Magazine*, from the years 1745 to 1752, the following instructive notices of the way in which our forefathers regarded the outbreak:

"In February, 1746, the second year of the great plague, Dr. Broklesby wrote: 'One beast goes, all sooner or later go. (The plague) will probably abate in a short time.........As an exotic plant flourishes, it will dwindle and die.' On the 12th of March an Order in Council says: 'If not timely prevented, it (the plague) will end in the destruction of all cattle.' In 1747, the third year of the great plague, the Council say the same thing, and complain of the apathy of the local authorities, and again it is said that the disease has lived through all the seasons. In 1748, the fourth year of the great plague, the disease had broken out afresh in several places—that is to say, it had returned to several places. In 1749, the fifth year of the great plague, it is 'all over England.' In December of that year the Council say: 'It rages with a malignity and violence little short of the first outbreak.' In 1750, the sixth year of the great plague, in the month of November, it is recorded that the justices have great difficulty in enforcing the orders. They have also great difficulty from gentlemen who hope all things, who fear all things, and who believe all things. How curious is the tendency of history to repeat itself! Grass is rotting on the ground for want of mouths to eat it. No one will buy hay: there are no rents; stalls are fouled, and then comes this observation, ''Tis a great pity they had not killed each beast.' In 1751, the seventh year of the great plague, the disease showed itself in Yorkshire, Westmoreland, Lancashire, Wilts, Monmouthshire, Gloucestershire, Dorset, Bristol, and again in London, as well as in other places. In 1752, the eighth year of the great plague, the cattle are being shot by order of Quarter Sessions, and paid for out of the county stock (or rate); and so on to the very end. And at the very end is this curious and suggestive record: 'A never-failing remedy has been discovered by E. Venables Vernon, Esq.'"

And then, adds Lord Cathcart: "We come now to consider the next point, which is slaughter; and here again I must be permitted to refer to the evidence contained in the *Gentleman's Magazine*. In October, 1745, they said the disease was incurable. Again it was said, 'Kill diseased beasts immediately: it is the only means of preservation.' In November they say, 'Killing out is generally approved of;' and I observe that the same arguments were used then as now about knocking human patients on the head, and there were even better arguments than are now used, to show that the disease is not infectious or contagious. The commission for Middlesex say: 'If any person refuses to have his sick cows killed and buried, in hopes they may recover or other pretence, they are not to have the allowance.' In 1747, the third year of the great plague, experience shows that nothing can contribute so effectually to prevent the spreading of the disease as killing the cattle when the disease first appears upon them, before it begins to be infectious and communicates itself to the rest of the herd—so it is an absolute necessity. In 1750, the sixth year of the great plague, it is observed that cattle were not killed soon enough to be useful, which means, for the killing to be useful. Then Virgil and Columella are quoted upon the desirableness of killing diseased beasts; and I take it that from Virgil down to Professor Simonds all the great authorities have held pretty much the same view upon that point. In the same year there is a record that in Quarter Sessions in Cheshire it was observed that such as began to kill as soon as the distemper appeared lost very few, and they speak of the wretched, tragic condition, where faith is put in medicines and letting the disease take its course. In the records of the same Quarter Sessions there are instances of success in slaughtering out, in many counties and places. Then it is said about killing, again: 'Regard the sound: to save one or two you risk many.' If the farmer at Elton had killed his cattle, Cheshire might have been saved 6,000 then dead.' Next I find this question: 'Do you think there is no cure?' The answer is 'None. Everything has been tried in vain; some remedies appeared at first to answer, but on further trial they failed. My own cattle I would kill at once rather than endanger the sound, and foul my premises and fodder.' To the question what right Government had to order killing? the answer is: 'The maxim of law that a man may not do with his own that which will hurt another's.' In the year 1752, the eighth year of the great plague, the disease, as appears by orders in Sessions, was in Somersetshire, where 20 cattle were shot by order of the Clerk of the Peace in the month of May. These were appraised and paid for out of the county stock. There were other slaughters and payment of a like nature ordered. We come now to consider the subject of convalescents. Public opinion at first was alive to slaughtering out, but hardly to the slaughtering of convalescents. The old writers at the time of the great plague say, doctoring leads to the spread of the disease. Lancisi, a great Italian writer upon this subject, says that cures spread the disease. So that it would seem that animals which have 'suffered many things from many physicians' generally die in the long run. I come next to the important question of compensation. If there is to be curing of diseased animals, then compensation will break down; because the very object of compensation is that diseased animals should be slaughtered as soon as they are attacked. But if they are to be cured and doctored and are then killed, compensation is clearly paid for nothing."

When we proceed to examine the extent of the devastation already committed in our island by the plague, we are materially aided by the recent Parliamentary returns (May, 1866). From this valuable, although imperfect statement, we find that on the 5th of March, 1866, we possessed about the following number of cattle:

	Cows.	Other Cattle.	Total.
England	1,290,529	2,016,505	3,307,034
Wales	222,546	318,855	541,401
Scotland	370,457	566,954	937,411
Ireland	1,386,176	2,107,238	3,493,414
Isle of Man	7,755	10,932	18,687
Channel Islands: Jersey	5,815	6,222	12,037
Guernsey, &c.	3,030	3,946	6,976
Total for United Kngdm.	3,286,308	5,030,652	8,316,960

We further learn that these cattle were distributed in our different counties on the 5th March, and died up to the 21st of April 1866, by the attack of the disease, at the rate per cent. which will be found in the following table, the percentage being computed upon the estimated ordinary stock:

ENGLAND.		No. of Cattle.		Losses per cent.
Bedford		25,513	....	1·70
Berks		30,149	....	1·62
Buckingham		51,840	....	3·52
Cambridge		31,731	....	17·90
Chester		93,044	....	34·28
Cornwall		133,652	....	·69
Cumberland		109,225	....	4·78
Derby		113,195	....	·90
Devon		184,077	....	·09
Dorset		70,002	....	·02
Durham		52,322	....	·77
Essex (extra Metropolitan) ...		50,736	....	3·66
Gloucester		96,831	....	·12
Hants		48,690	....	·61
Hereford		65,184	....	·83
Hertford (extra Metropolitan)		20,830	....	2·29
Huntingdon		17,667	....	11·30
Kent (extra Metropolitan) ...		50,835	....	2·63
Lancaster		202,552	....	1·87
Leicester		89,115	....	·37
Lincoln		169,294	....	5·66
Monmouth		36,735	....	—
Norfolk		92,386	....	5·81
Northampton		74,262	....	3·24
Northumberland		78,431	....	1·16
Nottingham		67,165	....	3·37
Oxford		42,135	....	5·90
Rutland		11,651	....	·16
Salop		107,208	....	4·89
Somerset		173,547	....	·10
Stafford		107,298	....	3·26
Suffolk		55,767	....	3·52
Surrey (extra Metropolitan)...		22,037	....	5.04
Sussex		74,670	....	1.40
Warwick		67,249	....	.88
Westmoreland		55,328	....	—
Wilts		77,724	....	.13
Worcester		45,789	....	.43
York	East Riding	64,809	....	6.30
	City of York			
	North Riding	119,233		
	West Riding	189,341		
Total	For Counties of Eng.	3,269,247	....	4·00
	„ Metropltn. Police District	37,787	....	15·80
	„ England	3,307,034	....	4·14

WALES.	No. of Cattle.		Losses per cent.
Anglesea	35,427	....	—
Brecon	29,604	....	—
Cardigan	47,384	....	—
Carmarthen	84,106	....	—
Carnarvon	44,072	....	—
Denbigh	46,695	....	7·16
Flint	19,383	....	14·54
Glamorgan	45,911	....	—
Merioneth	33,343	....	—
Montgomery	58,628	....	—
Pembroke	68,842	....	—
Radnor	28,006	....	—
Total for Wales	541,401	....	1·23

SCOTLAND.			
Aberdeen	133,451	....	·27
Argyle	57,831	....	—
Ayr	75,544	....	1·02
Banff	36,542	....	—
Berwick	15,192	....	1·54
Bute	8,252	....	—
Caithness	19,999	....	—
Clackmannan	2,104	....	11·64
Dumbarton	10,564	....	6·96
Dumfries	44,364	....	1·59
Edinburgh	13,013	....	7·64
Elgin, or Moray	20,406	....	—
Fife	27,297	....	12·28
Forfar	28,645	....	25·20
Haddington	9,659	....	5·02
Inverness	45,334	....	—
Kincardine	21,529	....	7·44
Kinross	4,028	....	14·38
Kirkcudbright	34,658	....	·10
Lanark	56,206	....	7·40
Linlithgow	8,029	....	8·00
Nairn	5,232	....	—
Orkney and Shetland	43,308	....	—
Peebles	5,970	....	·08
Perth	66,150	....	6·21
Renfrew	21,513	....	2·36
Ross and Cromarty	36,109	....	—
Roxburgh	16,084	....	·40
Selkirk	2,027	....	·73
Stirling	21,396	....	11·32
Sutherland	11,202	....	—
Wigtown	35,703	....	—
Total for Scotland	937,411	....	3·43
Total for Great Britain	4,785,846	....	3·68

In examining these returns with a map of England before us, we seem to find that the disease generally travelled across our island from the east towards the west, that it was the least destructive in the line it followed in the southern counties, and that its virulence diminished as it travelled towards the west. For instance—the loss amongst the cattle in Kent was 2·63 per cent.; this diminished to 1·40 in Sussex, to 0·61 in Hampshire, to 0·13 in Wiltshire, and to 0·02 in Dorsetshire. It was only 0·09 in Devonshire, and 0.69 per cent. in Cornwall.

In crossing the island in a more northern latitude, we find that the percentage of loss far higher—the loss in Norfolk being 5·81 per cent., 11·30 in Huntingdonshire, 3·24 in Northamptonshire, 3·26 in Staffordshire, and 4·89 per cent. in Shropshire. If we take a still more northerly line from east to west, we find in Lincolnshire the loss per cent. to be 5·66, in Yorkshire 6·30, in Cheshire 34·28, and in Flintshire 14·54 per cent. When we take the next line we find the losses far less, viz., in Durham 0·77, and in Westmoreland only 0·02 per cent.

A similar course of the disease seems to have been witnessed in Scotland. It was in the eastern counties of Clackmannan 11·61 per cent., Kinross 14·38, and Forfar

35·20, that the highest Scotch losses have been sustained. The per-centages of the western Scotch counties were very low—that of Argyle being 1·02, Kirkcudbright 0·10, Argyleshire 0·0, and Wigtonshire 0·0.

It would appear, then, that the disease exhausted itself as it crossed our island—that the easterly low level counties of Lincoln, Huntingdon, and Norfolk suffered the most, and that the warmer yet moist westerly counties experienced the least injury to their cattle from the plague.

From the returns which I have given, it will be seen that the average loss per cent. from the plague to April 21, 1866, was in England 4·14, in Wales 1·23, and in Scotland 3·43.

It has been computed that of the cattle in Great Britain one-fourth, or about 1,200,000, die or are killed every year, and that the mortality from disease in ordinary years is 4 and 5 per cent.

The measures to be taken to *prevent* the appearance of the plague in a herd, when the disease is in the neighbourhood, are perfect isolation, not allowing the cattle to go near any infected land, nor any animal, even a dog, to approach. The herd should not be allowed to even cross a public road. To these may be added proper feeding, good ventilation, and the employment of disinfectants. I am inclined to believe with Professor Gamgee, who observes: "The administration of tonics, in moderation, and especially preparations of iron, may be recommended for all cattle that have been accidentally subjected to the contact of infected animals. All should be done to support the animal's strength, that it may withstand the disorder."

In support of the use of iron may be adduced the evidence of the British Consul at Warsaw, viz., that in the outbreak of the rinderpest in Poland in 1857, they adopted, with much success, the plan of putting old iron into the troughs at which their cattle drank, so as to thus produce a highly-chalybeate water. The efficacy of this mode of treatment is said to have been discovered by the almost entire immunity from the disease in 1857 of the cattle on a farm where there is a chalybeate spring. A similar remark has been made by some of the Derbyshire farmers, with regard to a chalybeate spring in that county. It appears that the cows of the vicinity are always trying to reach this spring, and that the rinderpest has never visited the herds who drink its water. May we not, from these facts, be led to test the efficacy of the artificially-prepared chalybeate water, as a preventive of the plague?

With regard to the medical treatment of the disease, it is to be feared that there is too much truth in what Professor Gamgee remarks, in the preface to his valuable work: "Had I consulted my own desires alone, I should have dismissed the subject in one short sentence, by pronouncing the uselessness and deprecating the adoption of curative treatment. We should never treat cases of plague in Great Britain. They may do what they choose in Russia; but here it is our duty to prevent and exterminate the disease, and not play with it by using drugs." Many, indeed, are the remedies which have been proposed. Amongst these, perhaps, the use of sulphate of quinine offers the fairest chance of success. To use the words of Professor Gamgee (p. 109): "We have just as much reason, and no more, to expect this substance to cure the cattle plague, as the Spanish pilgrims had, three centuries ago, to expect the bark to cure the Countess of Chinchon's ague. It was a fair experiment which succeeded. Certainly large doses of these alkaloids ought to be well tried. If we give six doses, of ten grains each, to a man weighing 160 lbs., we ought to give in the same proportion in weight to a cow."

Some cures effected in the case of some young cows in the neighbourhood of Daventry appear to support the conclusion that sulphate of quinine may be usefully employed ~~in~~ the cure of rinderpest. The recipe, successfully employed at the suggestion of a nephew of mine, who is a surgeon at Daventry, is as follows: Dissolve two ounces of sulphate of quinine in two gallons of water; add half-an-ounce of sulphuric acid (the sulphate of quinine will not dissolve in the water without the acid is present). The dose, half-a-pint three or four times a day.

In thus giving an outline of our present knowledge of the cattle plague, we cannot fail to remark (and a similar observation applies, indeed, to almost all diseases) how limited is the information we possess. The suddenness of the attack, the fatality which attends it, the ill-success of different modes of treatment, startle and confound us; but these facts should not prevent the continuance of our efforts to ward off its attacks, and to discover a cure. The success, indeed, which has attended the researches of the professors of the medical profession during the last century should encourage us to conclude that there is yet to be discovered a cure for the most virulent diseases.

ON THE EXTIRPATION OF THISTLES.

BY A PRACTICAL FARMER.

The present season is becoming remarkable for the abundance of thistles: they are everywhere to be seen. Our pasture lands, which are usually pronounced clean, cannot fail to exhibit here and there a specimen, and our foul lands are foul indeed. Our pasture lands, where, owing to neglect last autumn, thistles were permitted to produce their ripened seed, and general inattention is the rule, now present a sorry appearance. Some lands are almost covered with the three prominent varieties—*i. e.*, the common thistle (saw-wort), the broad spike-leaved thistle, and the low creeping or bulbous-rooted thistle: these in every stage of growth abound, but more particularly the saw-wort variety. The late damp and showery weather has been favourable to the growth of thistle-seed, which appears to have stood the test of the late fine winter, and the spreading roots of the old stocks have not failed to throw out a profusion of stout stools, or, as we say in the wheat plant, "tillers:" these, with every young plant of autumn growth, make up a most prolific crop, such as has seldom been seen. The fallow grounds, where subject to thistles, look, if possible, worse than the pasture lands. Some fields, where cross-ploughing was deferred, appear to be literally covered, and these thistles have served in some degree the purpose of a green-manure crop for ploughing-in. I noticed one instance of cross-ploughing, in a field where thistles were very forward—almost all were knotted for flowering: this ploughing seemed to destroy them utterly, owing, I believe, to deep cross-ploughing and the subsequent dry and hot weather lasting for a few days. Our corn crops are not more than usually infested, but they have grown surprisingly fast and strong, and such has been the rapidity of growth latterly that weeding has been with difficulty accomplished, so that I fear many will be left to propagate their stocks. In reference to the extirpation of these pests of the farm, I need not say much. The course is simple: never let them alone, wherever they may be. On the pasture lands the common thistle most abounds, and it should be the aim of every grazier to keep them under. For this purpose I know of no better plan than the employment of aged men or women, as soon as the spring pastures are stocked, to spud them. These parties are supposed to be experienced in the mode of extirpation by this process of spudding, and are likely to be more careful in their work. To destroy a thistle effectually, it should be spudded at least one inch in the ground, so as to cut through the root below the coronal shoot—*i.e.*, "to turn up the bit of black," as it is provincially termed. The broad spike-leaved thistle should be dug up at least an inch below the coronal shoot; but that is scarcely enough, as its habit is to throw out more shoots from every root or fibre which can force its way above ground, and if only the coronal or "crown" is cut through, and not deeply, it will throw out many stems, which are more difficult to destroy than the original. The bulbous-rooted thistle is very difficult to master. It propagates very fast if not closely watched, both by its seed and by its tillering or creeping propensity, if it may be so designated. The roots are not, properly speaking, creeping roots, like twitch or white clover, but the bulbs appear to force their way laterally, and so quickly increase. Every root ought to be thoroughly dug up; or if this cannot be effected, no respite should be given; but as they jut out afresh they should be again spudded. This variety produces a great yield of seed, and as it is quite a dwarf kind, the seeds are not driven far abroad, but are deposited near to, so as speedily to form large thistle-beds. But some reader may ask, "What is meant by the term spudding? It is unknown in my district." It is this: The spud is a miniature spade, with a long shaft "handle," or "stick." The cutting or digging part is made of iron and steel, and is about three inches wide, and fits into the shaft, either by a socket, or as a spade, with "lips" or "wings." The use of this implement in the cutting up of weeds is "spudding." Spudding for pasture lands is, upon the whole, the best course to be pursued for extirpation, taking into account the majority of seasons; but in a season like the present, when the soil is well saturated by rainfall and continues soft and moist, I prefer to draw up the common thistle by "tweezers." These tweezers are similar in make to a blacksmith's "pair of tongs," but generally made of wood, and armed with corrugated iron plates at the ends of the nippers, which take hold of the thistle. With these the thistle is drawn up by the root to a considerable depth, and when so drawn seldom shoots out again. In order to their effectual extermination by tweezing, it is necessary to allow them to attain a somewhat strong growth. This by many is thought objectionable, as many fibrous roots do contrive to spread along near the surface, and subsequently throw up stools; however, if they are prevented growing strongly, very many of the stems break off in the pulling up, and thus leave the roots to put out afresh and more vigorously still. My own practice has been, for many years, to spud them in dry seasons, and tweeze them in wet ones; by this means many very foul pastures have been entirely freed from them. Nothing, in my opinion, looks so slovenly in our fields, or is so preventive of good and profitable grazing, as being overrun with thistles; besides, they occupy so much room. What a wide circular bare bed does a large broad spike-leaved thistle exhibit when dug up! and a forest of common thistles are much worse. Many fields with which I am acquainted now "carry" or graze from one to three sheep per acre more than they did when over-run with thistles. I have seen fields cleared of these pests in an extraordinary way. The thistles have been left to grow and produce their seed almost to ripeness, when they were mown down, raked together, and carried off. Of course, when plants of this kind are permitted fully to ripen their seed, they die away, like the corn or pulse plants. There is nothing surprising in this; but the exhibition of such crops of thistles is a libel or satire on pasture grazing; it cannot be defended, and the sacrifice of much of a summer grazing is requisite, to accomplish this feat of extermination. The eradication of thistles which infest arable lands is no easy matter. If the land is highly cultivated they grow with astonishing rapidity; their fine tapering roots strike down at surprising depths after their moist food, and although the crown may be cut through, they are soon up with the crop again. Dead or summer fallowing will alone thoroughly destroy them. Summer fallowing cannot, however, be generally adopted; we must grow our winter food. Every effort should, however, be made to destroy them before the seed is sown or the land planted. Frequent ploughing will do much towards it; but unless the seeding is deferred to a late period of the summer on lands thus infested, they cannot be entirely got rid of. The best course to be pursued is to put in all the seedings or plantings upon the ridge system; the fallow-working can then be continued through the summer, or so long as the crop is not injured by the horse passing between the ridges in horse-hoeing or ridge-harrowing. In this way much can be accomplished. In potato culture this method proves very efficacious; and with horse-hoeing, hand-hoeing, and moulding up, but few thistles escape destruction. It is similar on the turnip crop, but we lack the moulding up; however, by careful weeding, very few are left alive. It is not so effectual in "broad work:" there the hand-hoeing is neither so deep nor so constant as the horse-hoeing. The horse-hoe can accomplish from three to four acres per day; the hand-hoe scarcely half an acre, if properly done. Besides this, the hand-hoe is never applied sufficiently deep, as a rule, to destroy the thistle plant: in some operations it cannot be so used without injury to the crop; and in corn crops, for the most part, in hand-hoeing the thistle-top is merely cut off: it is not cut sufficiently low or deep enough to destroy the plant. It is almost impossible to destroy fully the thistles in a corn or pulse crop. The chief thing is to keep them down so as not to interfere with the progress of the crop. This is mainly done by hand-hoeing and weeding. Drilling in our corn and pulse crops is almost universal, hence every facility is given for early hand-hoeing. This should take place in suitable weather and when the corn or pulse plants are sufficiently grown to withstand any injury from the process. All thistles should be hoed at considerable depth, say from two to three inches below the surface. A second hoeing should take place in every infested field, to be followed by weeding with spuds, and having one hand armed with a stout glove, to draw up every thistle found in the drill rows. In this way, and after these courses which I have pointed out are being perseveringly kept up, and every season carefully watched, and the course adapted to it, I doubt not but these vexatious pests may be *extirpated.*

SHEEP *VERSUS* CATTLE.

At the weekly meeting of the Royal Agricultural Society, held at the Society's house, Hanover-square, on Wednesday, June 20, Lord Feversham in the chair, a lecture was delivered by Mr. W. Torr on the above subject.

Mr. TORR said: In introducing this question to the notice of the Society, allow me to observe that I take for my motto the old Dutch proverb, "The sheep wears a golden foot," and that it is not my intention to read what may be termed "a paper" respecting it, inasmuch as I entertain strong objections to everything in the shape of paper farming. I shall merely start some points generally in favour of sheep *versus* cattle (if you like to call it so) for your consideration and discussion. I will not go into any description of the different breeds of sheep, nor draw any invidious comparison between the Leicester and the Lincoln, the Southdown, the Shropshire, and the Improved Oxford, believing, as I do, that an intelligent farmer should know what suits his own mode of farming and occupation best. It is extremely difficult to distinguish the various improved breeds, and far more than even the breeders themselves can determine where one tribe ends and another begins. I therefore disclaim any prejudice in favour of a real good pure-bred Leicester, of substance and constitution, further than he seems to have done great service wherever he has gone amongst the long-wools of the nation; whilst, as far as I have seen, nothing has done aught but harm to this Bakewell breed itself. It is my sacred resolve, therefore, to keep the Aylesby flock pure, as it has been now for something like eighty years. These preliminaries being settled, I think it must be evident to the commonest observer that at the present moment, when that awful scourge, the cattle-plague, has devastated many districts of the kingdom, and almost denuded the land of the live-stock population, it is worthy of paramount consideration how that stock is to be replaced. Cattle are of slow growth. You cannot expect any great increase for years to come in breeding—say you want a three-year-old—that is, four years hence, and then only a limited issue, so many females having been swept off the homesteads. Of course, every endeavour will be made by breeders to increase their stock; and so it should be. At the same time I hold an opinion confirmed by practical experience, that on all second-rate grass lands, sheep have been, and can be made, far more profitable than cattle; and in the improved state of such lands by draining, &c., sheep can now flourish and do well, where in former times it would have been folly to have placed them. There is not a greater improvement in farming than an allowance of oilcake to grazing sheep. I have used oilcake largely, both for cattle and sheep on first-rate land, and sold bullocks last year under four years old at £45 each from grass. Mind you, the land was worth over £100 per acre, and the beasts had 8lbs. of oilcake per day—and they paid well for their summer grazing. This system only applies, perhaps, to feeding off the cattle or sheep more quickly, and on real good pastures; on second-rate land young steers are grazed, without the oilcake, mixed with sheep. Now it is here that a vast improvement may be made, simply by increasing the number of sheep and lessening the number of cattle—thus, say, instead of having one steer on two acres, and two sheep per acre, we put one steer on four acres, and four to six sheep per acre, and give the sheep oilcake. This opens a large field, and in all tolerably dry districts it can be done to greater profit, and will eventually be found more so than than the absurd process of taking up land because it does not improve. Why, how can it do so if farmers won't do anything to it? This I know too well is often the case in my own immediate neighbourhood. The next and, perhaps, a greater necessity is the keeping of sheep on the cold, strong lands of England, supposing such lands have been, or must be well drained, without which it is useless to suggest any improvement of the sort. The drains on grass land need more expense, and go in equally as deep, and more close, even than tillage, which has other advantages besides percolation and atmospheric influence from cultivation, especially the steam ploughing, that the grass evidently has not. When the water is thoroughly taken out of grass land, and you dress with almost any thing, say common wheat-chaff, cut straw, lime and salt, or, better still, a few crushed and rotten bones, and plenty of sheep put on, with oilcake, the change is magical, as I could show you on many a score of acres in my own occupation, this management befitting almost all the second and third-rate grass land. I aver that now is the golden opportunity for putting this great—I may say, national—experiment in practice; fewer cattle and more sheep, and larger remuneration for the tenant. I have not had very great experience myself in keeping a large number of sheep on cold, clay lands, because my farming does not represent that. I am in a much better position in respect of sheep. I shall, therefore, refer to the practice of Mr. Charles Randall, who carries it out better than anyone I know; and I shall speak of his experience in detail, and tell you exactly how things are done on the estate of the Duc d'Aumale, at Chadbury, near Worcester. 1st, As applied to grass land exclusively; 2nd, Where there is some arable land, or where some of the grass-land may be broken up. And I shall assume that it is strong land, because you do not want to tell people how to grow food for sheep upon light land. As to the first, I believe there is no mode of sheep farming practicable but to buy in ewes, sell off the lambs, fat as many as can be made so, as stores the rest, then feed off as many of the ewes as are too old or otherwise unfitted to breed again. Lambs cannot be wintered with any certainty of success upon grass land, more especially where that grass-land has been thickly stocked with sheep during the previous summer. Assuming, then, that this is to be the sort of sheep management adopted, the question is how to keep the greatest number in the most profitable manner—or, in other words, how to make the most money per acre by them. Three-fourths of the land should be kept entirely free from stock from the end of October, by which time the rams will be taken from the ewes, until the lambing begins. On the other fourth the ewes will be wintered, hurdling it over as a green crop, at the rate of about one quarter of an acre per day to 100 ewes, and giving with it sufficient hay, cut into chaff, to keep them in condition. When near to lambing, ½lb. of oilcake each per day should be given; or, if the grass-land is poor, this may advantageously be done throughout the winter as regards the condition both of the land and sheep. The land upon which the ewes have been thus wintered should then be mown. As the ewes drop their lambs, they are turned into the fresh pastures, continuing the daily ½lb. of cake with a little hay chaff. When about a month old, the lambs will try to join the ewes at the troughs, and then a small piece of the field should be hurdled off, and a little oilcake and chaff placed in low troughs, the lambs having access to them by means of a "lamb-gate"—viz., a hurdle with upright revolving bars, nine inches apart. As the lambs take to the cake, the allowance to the ewes must be reduced, so that the ½lb. per ewe will not be exceeded for ewe and lamb together. In this way one-third more ewes and lambs may be kept upon the same land than could be maintained in good condition without assistance. A larger proportion of the lambs will be ready early for the butcher, making the best price; and such as do not get fit to kill will pay for their cake in being strong healthy stores. Every grazier knows that such lambs will go on and thrive with little risk or loss; while he equally well knows that little stunted scouring lambs are dear at any price. The ewes will be in forward condition, and may soon go to the butcher, making room for a new lot; and the land will, by this consumption of cake, gradually and certainly become capable of keeping a greater stock. The chief objection to this kind of sheep farming is, the having to buy in annually fresh ewes; for, be it remembered, they are not sold for their good qualities—they are either old or ill-formed, have lost a quarter, or are otherwise bad sucklers. To obviate this objection I will adopt the second proposition: If there is no arable land, break up some of the grass land—the worst—breed and feed off the wethers at a year old, and the draft ewes, keeping on the ewe lambs for stock. The management of the ewes and lambs will still be much the same up to the middle of June, after which time the lambs must depend upon the produce of the arable land. They cannot be made to do well after they are weaned upon the pastures where they have been kept with the ewes. Assuming, then, the worst—that the land in tillage is clay, the crops to be grown upon half of it (the other half alternately being wheat) will be mangolds, cabbages, kohl-rabi and vetches. These crops may with certainty be grown upon clay land, where it is always difficult, and sometimes quite impossible, to grow swedes or turnips. In the northern portion of the kingdom where the climate is more favourable to the latter crops and less so to mangolds the one would be substituted for the other. At present we leave the men of the "far north" to take care of themselves as they are well able to do. The vetches will be useful to put the yearling ewes upon, and the old ones when their lambs are weaned, and should be eaten through iron hurdles. While this crop is being got through, the present will get fresh, the best of them for the draft ewes to be fed off, the others to carry the stock ewes till tupped. Of kohl-rabi a few acres should be grown and stored as mangolds, *i. e.*, with their roots and crowns left on, and covered with soil only, and kept until a fortnight before the ewes begin to lamb. These pulped and mixed with chaff will greatly improve the milk, and should be continued after the ewes have yeaned, and abundance of grass makes them no longer necessary. Early cabbages planted in October upon wheat stubble well mashed will be ready when the lambs are weaned, and with them must be given some hay-chaff, and to the wether lambs ¼lb. of cake; some cut mangold of the previous year (for these may be kept till July) may also be added, and will make the cabbages last out as long as may be necessary. The late York and drumhead cabbages will succeed the early ones, and carry on the lambs until it is time to plough up the land for wheat, and put the lambs to mangolds. This should be done in yards; the roots being pulped and mixed with wheat-chaff, and wheat-straw cut into chaff. If a little hay can be spared to mix therewith the better, but it is not essential. It is quite necessary, however, that feeding sheep should have cake or corn (the former the better), and hay chaff mixed with it. Malt coombs and bran are useful additions, where they can be bought at £5 per ton. In this way all the wheat-straw that is not required for cutting into chaff will be converted into good manure, and in order to economise the straw it is well to cover the yards one foot, and the shedding two feet thick, with burnt soil. It will very rarely happen upon a farm such as we are assuming that clay cannot be found to burn. There is usually plenty of such raw material to be obtained from road-sides, hedge and ditch banks, borders, &c. The portion of this with which the open yard is bottomed will absorb the urine, and improve the quality, while it increases the quantity of the dung-heap, and that which goes *dry* as it should do into the shed must be turned as often as required until it becomes so saturated with dung and urine that turning no longer provides dry bedding for the sheep. It is desirable, then, where practicable, to cover these ashes over with fresh ones, but this cannot always be done. Carting upon that sort of land in winter is a question of frost or no frost; but it is not material beyond the saving of straw. If fresh ashes cannot be obtained, straw must be used upon the old ones. When the feeding is over, they are useful, mixed with superphosphate, to apply by the drill to the green crops. It must not be supposed that the sheds necessary for this purpose are expensive erections. A thatched roof upon posts five feet high, the spaces between the posts on the north side being filled in with two rows of wattled hurdles, one on each side of the posts, and rammed between with straw, is all that is required. Such is the practical experience of Mr. Randall with a large flock of sheep in a very cold clay soil, a soil that is a good deal below the average of land which may be termed sheep land. Of course, I need hardly say he has not a large number of cattle; but he has a considerable lot of sheep—sometimes from 600 to 800 feeding sheep. Here let me put on what I call the crowning point of wool, now the staple, not only in a mill but on a farm. Sheep, as it were, standing still, grow wool; and at anything like late prices of this article, grown under a certain zone of latitude, it is doubtful whether a wether could not be more than self-supporting, by yielding annually his fleece, and pay a profit two succeeding summers. This I advance not against early return and maturity, but would choose this last in support of sheep under the most favourable circumstances. For example, a friend of mine, who has had 18 sheep of me during the past 18 years, and has engaged the 19th ram to put on his old, time-honoured Lincoln flock, realized at the April fair of Lincoln £5 each for 200 hoggets, barring a tenner for luck, left to markets, &c. Well, now you have here, say three hoggets, making £15, *versus* a very good year-and-a-half-old steer, or in many counties two years old. Just, for one moment, see the great disparagement, and a large margin to spare. Referring to use of artificials: these hoggets, of course, had all they liked, and a little more, in their feeding-troughs: my bullocks had not quite their fill. Still, I freely admit, the profit is on the Improved Lincolns, and not on the Shorthorns, or any of the other cattle tribes. I was going to say something about the soil on which wool grows best. On my own farm I find that I can grow better wool on some portions of it than on others. In the south of our county, about Spilsby and that part of Lincolnshire, wool grows in a most extraordinary manner. If you go farther north, say as far as Fifeshire, or further south than the English Channel, the quality of the wool falls off. It then becomes hair or moss. The valuable fine lustre wool is pretty nearly confined to a few degrees of latitude, not only in England, but nearly all over the world. So that the space being limited, there is little or no danger of wool ever glutting the market any more. The present unjust warfare, however, is against its price; but hence and away with that. Wool will ever bear a great value; and even if 800 sheep be kept where 600 were kept formerly, there are 800 men, and far more, perhaps, in comparison with the 600, who now wear a good broadcloth coat instead of a miserable fustian; and so it will continue to be. And let me add the stern reality to the outer man, that the inner man tends to a mutton chop against a high price of roast beef, for reasons that the Inland Revenue could explain. Now, to reply to objections before I hear them. The foremost of these will be, no doubt, "What will you do with your straw?" This does not apply to the cold lands of England, but to a large portion of England where it has ever been considered that a man farms best by having most cattle to consume the straw and convert it into manure, and by being, generally speaking, a large sheep farmer as well. Take the east of England as an illustration. But to the question—"What will you do with your straw?" I cannot tell you *in toto*, but I can show you in part; and as many men are of many parts, I hope other men will try to find out more than I have done. I keep all my cart-horses on straw, or preciously near so, as fodder; and they are in the stable or fold-yards 365 days in the year. I have at present about 60 consuming 1 peck of crushed corn or sprouted barley, and 2 lb. of oil-cake daily. I have no sick horses—not one per cent. They live too long, and won't die; so I kill them for the kennels at Brockleby. I am no horse dealer, and know less than nothing of that crafty craft; but I do know that one of the big blots of bad farming is the turning out of cart horses on grass lands. Not even steam cultivation or aught else can remedy the harm occasioned by this folly or mismanagement. A tremendous lot of straw can most advantageously be got quit of in this way. Next, as I have said—and, perhaps, to many it is a new saying — cart all your chaff from the thrashing-machine on your grass lands at any time, and in any quantity, as may be convenient; and the early worm will ever be conveniently hard by, to help to fertilize. Further, in case of a repletion of straw, I believe a large quantity might be cut into chaff, and placed between the ridges of turnips at the ordinary width of twenty-seven inches apart, where it would act as an absorbent of all urine, &c., from sheep cultivation on farms where no grass land can be had.

Mr. Dent, M.P.: When the sheep are eating it off?

Mr. Torr: Yes, on light lands, between the ridges of turnips. I have some done some in this way, though not to a great extent. But you may apply an immense quantity of chaff to grass lands, and that with wonderfully good effects. At all events, such may be the source of destroying, in a good form, some big stacks of old straw. Some may think this a wild suggestion who have never been bothered with too much chaff. Only don't burn it, and give your neighbours the benefit of the smoke. Surely, many will criticise these conceits as they may be called, and say, "Why not sell the straw?" Near to a town this may do; but the landlord has a clear right to see, although "straw is only straw," that a poor farm is not made still poorer by waste. Nothing can be advanced too largely on root crops, either on the lightest or heaviest soils, care being taken that all the produce, or as near as may be, is returned to those soils. Hence I have ever argued that this is the best position for placing manures in. To conclude: What I maintain is, that all farming should hold sacred the indestructibility of matter. The world weighs now, as philosophers tell us, to an ounce what it did when Adam was a farmer. A cigar smoked, if all could be again collected, would be the exact weight of the pennyworth of tobacco. So, even in ancient times, when Carthage was the granary of Rome, and the marshes afforded food for man, instead of pestilence, they would never have been exhausted, I venture to assert, if the broad principles of this, my conservative attempt to prove that Britain may help herself, even under the present direful dispensation of Providence, were acted upon in the manner I have now suggested.

Mr. FRERE said: In speaking of lamb gates, Mr. Torr mentioned vertical revolving bars.

Mr. TORR observed that they were of the same kind that Mr. Randall used.

Mr. FRERE would suggest the adoption of a revolving top bar, which would be found particularly serviceable with large lamb gates. Now he (Mr. Frere) professed to be a sheep farmer, and he farmed dry land. It had been his study to increase his sheep, and he believed his flock was half as large again as that which in old times it was imagined was the utmost number that the farm could possibly carry. He had a sheep walk which was formerly restricted to 11 score ewes, but he kept upwards of 15 score. He did that by growing more root crops; and in connection with that his object was to develope autumn cultivation, and to put his manure on to his roots, taking it out partly in the winter. There was another object connected with that. Of the increased roots half must be drawn to a sound dry layer, provided for the consuming of those roots which were grown close by it. With an increased stock of sheep, and especially lambs, one encountered what would always be an obstacle to those who tried to go fast over the road of improvement; he referred to the evils that arise from over-stocking. And here, if he might digress for a moment, it would be to caution those who thought that they could substitute a large for a small stock of poultry at this moment with advantage, forgetting the evil of the land becoming tainted. In order to keep a larger number of sheep, he naturally had recourse to a larger consumption of straw as well as of corn. With him the best straw was barley straw; he would remark, steam might be applied to the cutters with great advantage, inasmuch as when it was used the straw was much shorter and softer, and sheep required a shorter and finer straw than oxen. Instead of growing 100 acres of wheat and 100 of barley, he grew 140 acres of barley and 60 of wheat. Thus he had only 60 acres of wheat to put on in the autumn; and both the cart and the team work, which under the old system would have been appropriated in the autumn to the wheat, were now used in drawing the root crops, mangold, kohl-rabi, and early rape, for the next sowing.

The CHAIRMAN: Do you sow turnips, or swedes?

Mr. FRERE said there was too much dryness for swedes; and kohl-rabi made better way than swedes in ordinary seasons. He had 40 acres of seeds not broken up in the autumn for wheat. They would be adjacent to his crop of roots, and from one-fourth to one-third of the root crop would be drawn off and fed upon that clean layer, even perhaps by younger sheep, during October, November, and December. At the end of December it would be stirred by a cultivator to as small a depth as might be, and it would be worked fine before the winter frosts came. It would be in that state during the month of January, probably while the manure was being carted on for the mangold in the time of frost, and, after it had been pulverized by the winter frosts, it would be ploughed in two inches deep; and then it would lie again for three or four weeks, to get quite fine before the time for barley sowing arrived. In that way he had succeeded in obtaining two pieces of as fine barley as he had ever seen in his neighbourhood. Of the 140 acres of barley, the straw of 100 probably was consumed and eaten by the animals—it certainly was so last year. Their stock of straw was so short that they were compelled to thrash the barley rather fast, the straw being eaten up very rapidly.

The CHAIRMAN: By "the animals," you mean sheep?"

Mr. FRERE: No; all.

The CHAIRMAN: But it is sheep that are in question.

Mr. FRERE: The sheep formed the larger proportion. The one drawback which he found was this, that on the drier part of his land the straw manure had a special value for the turnip crop as a source of moisture. In the recent dry years he found that white turnips, when they were put in with straw manure in July, were able to stand drought, while those which had had artificial manure, though they came up well, died off. This difference he was inclined to attribute to the very fair supply of water which was gradually drawn up from below after the ploughing in of from 8 to 10 tons of straw manure, three-fourths of which was composed of water. There was one other purpose for which straw manure was required, namely, the growth of wheat on light lands. The one element in the straw produced on light lands, which they did not seem able thus far to replace satisfactorily, was potash. He was sorry to say that, so far as his experience had gone, he had not found potash in any artificial form which would serve as a substitute for the potash in yard-made straw manure. He had endeavoured faintly to trace the modifications which he had made on his farm, in so far as they bore on the subject under consideration. Of course, with the increase of sheep-feeding and the eating of straw on the land, a decrease in the number of bullocks in the yard was a natural and necessary consequence, and he had therefore hardly touched on that point; but the drawback connected in the change of system was that he still wanted straw for his turnip crops on his light land, and for his wheat also on such land. If the soil were a less-stiff clay, he might not perhaps want any yard-made straw manure at all.

Sir GEORGE JENKINSON, M.P.: Don't you think that yard-made straw manure is most essential on heavy land?

Mr. FRERE said, according to his experience, it was not. Some years he used to think that he could not grow mangold on stiff land; but five or six years back he told his farm-bailiff to try artificial manure, and after that he did not wish for farm-yard manure.

Mr. DENT said there could be no doubt that in a large portion of the Wolds of Lincolnshire and Yorkshire the idea prevailed that farmers could not get straw-yard manure unless they used plenty of cake to convert it into manure. Nor could it be doubted that, owing to the losses recently sustained, there would in many cases be a great difficulty in procuring bullocks to make the straw into manure. There had, indeed, been great difficulty even in the last winter. Then came the question how far they could make good straw-manure with sheep. He was inclined to think that in many of the districts where large quantities of turnips were grown, ewes had, as a rule, had far too many turnips and far too little straw. His own experience of his flock of sheep was, that the fewer turnips the ewes had, after being removed from the tup, the healthier they were, and the better they did altogether; and the same remark applied to the lambs. The desirableness of keeping breeding ewes in a yard, and turning them out for a portion of the day, giving them pulped roots mixed with straw and dry meat, was, he should imagine, tested to some extent last winter; and, for his own part, he thought that would lead to a solution of the difficulty of keeping a breeding flock on strong land where there was very little grass. On his farm he had never found a superfluity of straw, or more than he could conveniently use; while at times he could certainly have used more than he had with advantage. As regarded cart-horses, he had adopted Mr. Torr's plan. He never thought of turning them out to grass, and he believed that that was one of the greatest mistakes a farmer could make, as nothing scarcely did grass-land so much harm. There were constant battles and arguments with farmers on that subject. They said that tares were very expensive to grow, but he did not himself believe that. His plan was very much the same as that which Mr. Torr had spoken of; he gave chopped straw all the winter, open straw as long as he had any, and at this time of year plenty of tares and an allowance of corn and chopped dry meat.

Sir GEORGE JENKINSON remarked that that plan could not be carried out with young horses.

Mr. TORR: Yes, it is just the same thing.

Mr. DENT continued: He was speaking only of farm-horses, He had always considered sheep and bullocks far preferable to horses. To have hoggets carrying on their back fleeces which could be got rid of at the end of the year was far better than having horses from which no profit could be got until they were three or four years old. As regarded Mr. Torr's idea of using chaff on grass lands, he wished to say that he had seen a little of that tried with very good results. Almost anything, in fact, that was put on grass lands would do good. But he did not himself see any great objection to allowing straw to be sold, provided the landlord saw that compensation was made in the manure that was purchased. He thought that on the class of farms where there was a superfluity of straw, and the landlord might be satisfied that there was a sufficient quantity of good linseedcake or good artificial manure bought to replace the straw, the sale of straw was not so objectionable as some landlords and some land-agents had seemed to think, especially in the neighbourhood of towns, where straw fetched a high price. What was read by Mr. Torr respecting Mr. Randall's management of sheep was very valuable; and he (Mr. Dent) was surprised that, after the system was placed before the members of the Society by Mr. Randall himself, it was not carried further by the strong-land farmers than it had been hitherto. He would suggest also whether they might not keep an increased quantity of both cattle and sheep, by keeping cattle in the summer in yards, and so freeing the grass-lands for the ewes and lambs. As to the difficulty of keeping lambs on grass-lands in winter, he would remark that he had seen some lambs in that position and receiving cotton-cake, and, though there had been very few losses when he left the country, the result did not appear to him satisfactory. The animals had a poor, weakly, and unhealthy look; and his experience was that the system was not satisfactory, either as regarded the produce of wool or the growth of the sheep. In conclusion, he would remark that Mr. Torr's lecture was a very suggestive one, and one from which a great deal might be learnt (Hear, hear).

Sir **George Jenkinson** would like to know why Mr. Frere did not recommend straw manure for clay land. His experience was that, although you might possibly grow—he had done so himself—as strong and as good a crop of mangold with artificial manures, such as superphosphates and guano mixed in proper quantities, yet on very stiff clay straw-manure opened out the clay and tended to make it more friable in future years. Straw manure opened the pores, so to speak, more than artificial manures, especially if the crop were fed-off, on the clay. He held a very strong opinion against the advisability of feeding off grass with sheep on strong land, believing that, by trampling down, the animals caused great loss. That brought him to another question. He would ask Mr. Dent what kind of grass land it was, on which he had observed that lambs did not winter well? For if Mr. Dent's principle applied universally, and if his own experience and that of others who farmed clay land were to be relied upon, it followed that they could not keep lambs anywhere. His (Sir G. Jenkinson's) experience in keeping lambs on clay land last winter was, that in feeding off his root crops he lost a tremendous proportion. Lord Ducie's steward had told him that his own experience was similar, and he said he regarded it as nothing less than madness to attempt to keep lambs on clay lands during such a winter as the last. It seemed, therefore, he repeated, that they could not keep lambs anywhere.

Mr. **Dent**: Yes, you can keep them in yards.

Sir G. **Jenkinson**: There, again, they come to the question of straw, including the sale of straw; and he considered that if tenants were allowed to sell straw the means of keeping winter stock in the yard were thereby diminished. He would ask Mr. Dent to state what evil he had found to arise from wintering lambs on dry grass land, giving them corn and chaff? His experience, though he did not wish to put it against Mr. Dent's, was that that was the best way of wintering lambs. He had tried it in yards, he had tried it on the plough, and the result of his experience, which came through his pocket, was that the safest way of wintering sheep was to winter them on dry grass lands, with chaff and corn, not giving the ewes any roots at all till after the yeaning time. That was, he believed, the safest general rule, though it might be deviated from according to the varying circumstances of different districts.

Mr. **Wells** said he had lately changed his farm. Five or six years ago he lived in Kent: he now had a farm in Huntingdonshire, and nothing was clearer to his mind than that in some districts it was not possible to have a breeding flock, while in others it answered. In Kent he kept a breeding flock in opposition to the opinions of his bailiff, but the result was most satisfactory. He now thought he could see his way to the carrying out the experiment of keeping a breeding flock successfully. His neighbours kept excellent flocks of large Lincoln sheep, and he hoped to do the same. He mentioned this simply to support Mr. Randall's principle that on clay soils it was fighting against nature to force a breeding flock, and he should recommend no one to try it.

Mr. **Stratford** observed that the question under consideration was very closely connected with the influence of climate. He recollected a period when Lord Ducie had one of the best breeding flocks in the kingdom, but it soon showed a remarkable deterioration. In Cambridgeshire Mr. Frere had not half the amount of water that fell to the lot of Lord Ducie and most of the West of England farmers, who were compelled to keep their sheep to a great extent in yards. Mr. Randall might be said to farm in the midland district, and in considering cases like his it was desirable to keep in view the differences of climate and moisture.

The **Chairman** had great pleasure in moving a vote of thanks to Mr. Torr for his kindness in coming forward and delivering so interesting and important a lecture on this subject. There were a few remarks which he should like to make, but it was unnecessary to trespass upon their time at any length, especially as the subject turned chiefly upon heavy lands, in which he had not had much practice or experience. Still, he found that it was extremely advantageous to keep up a good breeding flock of sheep. In fact, he had two different kinds—Southdowns and Leicesters, and he found both useful—the latter for wool, and the former for mutton. He concurred in the observation of Mr. Torr that the best way to keep them forward for early maturity and in good condition was to feed them abundantly upon oilcake when in the fields, and he could not agree with Mr. Dent in the advisability of keeping cattle in yards during the summer.

Mr. **Dent** said he had merely thrown that out as a suggestion.

The **Chairman** thought it was far more conducive to the health of the animals to turn them out to grass, and that it was more in accordance with nature that they should have grass early in the season. Indeed, he believed that it was greatly owing to the two last seasons being very dry ones that the cattle disease had prevailed so extensively, although he admitted at the same time that it might have been materially checked in some parts of the country, if due precautions had been taken in the first instance. It was a remarkable fact that the high breeds of cattle—the "pedigree" breeds as they were termed—had been entirely free from the pestilence. He could answer for his own, for the Duke of Devonshire's, and for many others, that they had been entirely free from the disorder; and he should be extremely sorry, whilst agreeing that sheep were of the utmost importance to cultivate, improve, and increase in quantity, if in consequence of such an increase the cattle of the country were to be sensibly diminished. He knew perfectly well that sheep did improve the land, and were more profitable to the farmer. At the same time, it was of great importance to maintain our best herds of cattle; and he believed that the more farmers had the opportunity of crossing their cows with the best breeds of cattle, the better and more profitable they would find it to be, and the more conducive to the continued fertility of the land. The meeting was greatly indebted to Mr. Torr; and he had much pleasure in proposing a vote of thanks to that gentleman for his lecture.

Mr. **Dent** seconded the motion, and said that Sir G. Jenkinson appeared to think that he had recommended the indiscriminate sale of straw on farms; but he had no idea whatever of the kind. All he had said was that he considered the objection to the sale of straw had been carried further than was necessary, and that in certain districts, where large quantities of straw were produced, it would not be disadvantageous to the landlord or the tenant to sell the straw, provided it was replaced by oilcake or other artificials. With regard to keeping lambs upon grass-lands, he had tried the plan two winters—once during nearly the whole winter, and another time up to the month of December—and he found an evident deterioration, and that the animals were not nearly so good as the wether-lambs, which had been put upon turnips. Perhaps they had not quite such good keep; but, even giving them a fair allowance of corn and cake on the grass-land, they did not do so well as the wethers. He came to the conclusion, therefore, that there was nothing like putting them on rape and turnips as soon as he could; for they not only began well, but continued well throughout the summer. As to keeping up breeding stock where there was a short supply of straw, they might grow tares and green crops for the feeding of beasts.

Mr. FRERE explained that he did not mean to recommend straw-manure on strong land; but he had stated that he could get on upon strong land without straw.

Mr. TORR, in acknowledging the compliment, said he had delicately avoided making any reference to the absence of rinderpest from large herds like his own, conceiving that it was not right to speak in terms of exultation on such a subject, because they could not be regarded as totally exempt from attack. The only reasonable ground which he could discover for their escape thus far was, that the Shorthorn breeders of England had carefully abstained from dealing in cattle during the existence of the plague. For his own part, indeed, he had not purchased a single animal since the month of August last. The breeders had shut up all their bulls, and as their herds were extremely valuable, perhaps they had spent more money in the adoption of measures for their protection. He entirely agreed in the observations of Mr. Dent, with respect to keeping cattle in yards during a portion of the summer. Instead of taking them in as he used to do in the middle of November or even December, nearly all his steers were in his yards in September. They were not now turned out as was formerly the practice in the winter for days and shut up at nights, but remained in the fold-yard until the middle of May. Thus the store cattle were placed under a better system of management during four months more at least in the year. Twenty-five years ago he had seen the whole of the North-Riding of Yorkshire covered with cattle throughout the entire winter; but of late years that practice had gradually given way; and it was undoubtedly a very considerable improvement. With regard to horses, he was of opinion that all horses ought to be in fold-yards; not exactly in stables, but in yards, with one-third or two-sevenths of the surface covered in, and without a thoroughfare through them. Of these "bays" he had a very large number, and he found that by the use of cut straw and tares he could make famous manure with a lot of young horses. Moreover, they were far better there than galloping about the fields. His cart horses, in yards, supplied with cut straw and tares, did remarkably well, and the system was a very great improvement. A good many years ago he kept his cart horses almost entirely on sprouted barley, and with sprouted barley and oilcake he found he could do without cut hay. The great object was to get muscle in a horse, and for that purpose sprouted barley was the best thing in the summer months, when they had not too many tares. In the winter, however, it was rather difficult to get the barley to sprout. A word or two as to the use of oilcake. His practice was for one boy to attend to four horses. Each boy was supplied with 8 lbs. of cake per day, dissolved in five or six buckets of water, and every feed of chaff given to the horse was saturated with the mixture. The result was that the animal ate his straw with a keener relish, and colic, as it was termed, which in reality meant obstruction of the bowels, was thereby effectually prevented. In winter a few turnips were very good. As to the question of sheep *versus* cattle, he might state that last year he wintered over 3,000 sheep as against 300 cattle, and his experience was that for every £2 he got from the cattle he realised £5 by the sheep. The fact was that sheep were always returning money, no matter what the time of year.

The meeting then separated.

IMPROVEMENT OF BREED IN CATTLE.

FROM A CATTLE-PLAGUE POINT OF VIEW.

From time immemorial physiologists have spoken of the temperaments of the body, but they are far from being agreed, one saying one thing, some another, according to the nature and position of the ground from which they have viewed the subject. In the fifth edition of a not very old but highly popular work, for example, the writer says: "Temperaments have been variously distinguished: the division most generally received is into the sanguinous, phlegmatic, choleric, and melancholic," as applied to man; while a modern writer in reference to cattle gives the following three divisions—viz., nervous, thoracic, and abdominal. But in every period writers are nearly agreed that to cultivate the development of any one temperament, whatever the division may be, is to improve the breed in that direction. As "like produces like," according to the old proverb, so if the farmer can, by dint of dietary and management, get breeding-stock to show a greater development of any one region of the body, or of any particular substance of the body, as fat, bone, muscle, or milk, and if by the continuance of such a practice, and the careful selection of the animals he continues to breed from, he succeeds in giving to such a development an hereditary type, as it were, so that the offspring inherit the peculiar organization of their parents, then he may conclude that his breed has been improved in that direction, the term "improvement" being of course confined to the isolated view thus taken of the subject. But if this extra development is either abnormal or produced at the expense of some other part of the body, it may therefore in a more general sense be considered the reverse of the improvement of the breed. If, for example, an extra development of fat and lymph is obtained at the expense of blood, bone, muscle, and nerve, the breed may become so predisposed to catch nervous and inflammatory diseases of a contagious character as to render it worse than worthless for the raising of stock, and even dangerous to be kept in the vicinity of any other herd or large market-towns frequented by droves of cattle, home and foreign, or in a closely inhabited country like England, having so much intercourse with the other nations of the world.

Both of the above divisions of the temperaments of the body evidently fall short of meeting the requirements of science. The term "temperament" itself is not free from objection; but it is not our purpose to enter upon such a course of inquiry. It will be enough under this head if we simply mention that the progress of physiology appears to indicate a more chemical division, everything now being subjected to chemical and microscopical analysis, and designated accordingly.

In the improvement of the breed of cattle for any definite purpose, as the produce of fat, lean (or flesh), and milk, much depends upon the starting point as to breed and management at the commencement. If we go back and examine closely the improvement of our Shorthorns, Devons, and Herefords, or that of any of our different breeds of sheep, as the Southdowns, Leicesters, &c. from the commencement, we shall find something physiologically peculiar in the parent stock, call it temperament or what you may, from which they have respectively sprung; and also, in the common breeds and general system of management, something different in many respects from what is to be found now-a-days. At that time by far too high a value was placed upon fat, both from a commercial and physiological point of view; consequently a constitutional disposition or tendency to lay on fat was considered the leading characteristic of an animal in the improvement of its breed. This, too, was done without sufficient precaution having been taken to avoid obesity, an hereditary cachexial disease, in which a depraved and vitiated state of the solids and fluids generally is attended with an excessive development of adipose tissue and deposition of unhealthy fat, the whole edible portion of the carcase becoming unwholesome food for man. Its greatly deteriorated value in the market proves the soundness of this conclusion. It is very remarkable how the poorest and neediest of the lower classes shun such meat upon the butcher's stall, handling and smelling it with wry faces and a shrugging of the shoulders—all sufficiently indicative of the strong unfavourable opinions they entertain as to its wholesomeness and economy as an article of diet. Almost no price, however small, will tempt the more intelligent and better-to-do portion of society to purchase such meat; not only because it is thriftless and unwholesome when cooked and eaten immediately, but also because every portion of it must be consumed the day it is purchased, othewise it begins to decompose, giving rise to disease-breeding malaria, of which ten times its value will not again sweeten the larder or pantry, restoring either to its former condition. And this is not all; for its consumption has a tendency to lay the foundation of obesity in those who eat it. It is no wonder therefore that town's people and villagers are beginning to get sensitively alive to the necessity of lowering the value of such meat, and extra fat meat of every kind, to a figure below what farmers can produce it for. On the other hand, obese animals are in such a low state of vitality as to be wholly unfit for breeding purposes; while they are doubly liable to be carried off by every contagious disease that may visit the locality in which they are kept. A conclusion closely similar is arrived at in cases of an extra development of the adipose system which does not assume the confirmed obese habit, the health of the animal during life and the value of its meat when sent to the shambles, being both greatly depreciated. If therefore these facts are kept closely in mind while comparing the past with the present, we shall find the two starting points in the improvement of the breed very different the one from the other, even where the farmer wishes to attain the same object in the improvement of the same breed. Thus, if he were desirous of a greater development of fat, he would not follow in the footsteps of Cully and Bakewell, either as to food or general management: much less would he follow in their footsteps were he to commence the improvement of any of our native breeds, as the Galloway or Highland ox and mountain breed of sheep. On the contrary, if he is at all versant with the progress of this branch of science, he will base his practice of improvement upon a very different foundation.

All our native breeds of cattle have less or more degenerated under the abnormal treatment to which the race was at one time subject; so that as this degeneracy, or departure from the normal type, is hereditary, the general rule of improvement is to restore animals under the process of improvement to their original state when their great Creator pronounced their health, symmetry, and every other quality, *very good*. For this purpose we are apt to talk of natural food, exercise, temperature, and the like; and such, no doubt, would be the formula were the ox or the sheep in its original paradisiacal state of perfection; but it is sadly otherwise in many respects. Into the details of such departures from the original it would be the height of presumptuous speculation to go. In the time of our pastoral forefathers, doubtless Nature did much to adapt herself to the peculiar exigencies of the case, whether that case was a Teeswater or a Shetland ox, or a Southdown, Leicester, Lochaber, or an Orkney sheep; but in modern steam-plough-cake-and-corn times, it may not inaptly be said that Art has taken the matter wholly out of Nature's hands—at least in our southern provinces; and the further we advance in the direction in which the general body of farmers are now moving, the more artificial will the dietary and management of cattle become: hence the difficulties with which the solution of the problem is surrounded. Still, that is no reason why Art should proceed from bad to worse in the management of cattle, by producing an inferior or lower standard quality of meat as animal food for the people, and a lower quality of vitality in animals for breeding purposes—a practical conclusion at which very many physiologists of the present day, unfortunately, arrive; the opinion that a certain degeneracy of race has hitherto attended the improvements that have taken place in the breeding of live-stock becoming more and more general with our progress in this branch of physiology.

When examined from a cattle-plague point of view, the retrograde movement farmers have thus been making in stock management is somewhat alarming at first sight. Happily, however, for some time past a strong counter-movement has been taking place, purposely to improve the health of cattle, and the quality of the milk and flesh they yield as human food. But making every allowance for the progress thus made to restore cattle to their original excellence, the present position of the country is, after all, not what its true friends would wish it to be; for it is manifest that the forcing system of management, the early maturity of growth attained, and the extra development of fat, have greatly lowered the tone and force of the nervous and muscular systems, vitiating at the same time the whole of the fluids and solids of the body, thereby greatly predisposing animals to catch pleuro-pneumonia, rinderpest, foot-and-mouth disease, small-pox in sheep, and other maladies that have recently been and are still decimating herds and flocks in a ruinous manner. It is therefore impossible to look the whole aspect of affairs broadly in the face at present, without feeling deeply sensible of the unsatisfactory state of stock management, and the necessity that exists for all sections of the community, consumers as well as producers, joining and supporting by every means in their power the counter-movement above referred to, so as to restore the deranged functions to a more healthy state of action. Farmers have doubtless yet much to learn, and the science of physiology itself has to be much further advanced, before they can copy and imitate successfully the examples of Nature; but this fact only calls for the greater perseverance in the meantime in prosecuting the great work of general improvement.

In the improvement of breed more attention than has hitherto been paid must for the future be paid to the proper development of active principles—powers and forces. A return to the normal standard of vitality obviously requires an increase of life, so to speak, or organic action. Calves and lambs must be taught to go through their gymnastics with more ease and a greater uniformity and natural elasticity of action under the new system than they have hitherto done under the old. Fitful, forced bursts of passion, between long, dreamy, sleepless hours of repose, won't do any longer. Dead-and-alive lumps of beef and mutton lying in the pastures are out of fashion. Natural life in all its vivacity is now the rule, both at the homestead and in the field. The estimate of the changes thus taking place is readable enough to all who have practically studied the book of Nature; for to grow plenty of healthy lean meat is to keep the candle of life burning all the while the process of making it is going on, whereas to grow abnormal fat is to put out the candle, thereby making all fat that will be fat—the candle itself included. What follows is soon told in a few words; for, according to the old proverb a penny saved is twopence gained; so a pound of fat saved under a low state of combustion or animal heat and action is two pounds gained in carcase weight for the shambles. But this abnormal state of the active functions is opposed to the natural growth and development of bone, nerve, and muscle. It is even worse than this; for, as the reparatory processes in the keeping of organs in repair cease to be properly performed, bone, nerve, and muscle lose volume and quality. In other words, as extra fat increases under the sleeping shut-eye process, so nerve and muscle decrease in health, strength, and usefulness, the whole system becoming at the same time predisposed to contagious diseases. On the other hand, cultivate action, and you cultivate nutrition and development; for action manifestly depends upon nutrition, and nutrition is reciprocally stimulated by action. Thus an organ that ceases to nourish loses at the same time its power or faculty of acting; consequently, those organs whose active powers are kept in the best working order by proper exercise possess a more healthy and active nutrition; whereas a less degree of action or inaction, on the contrary, effects a less healthy and active state of the nutritive and reparatory processes. And this applies to all the functions of the body—vital, natural, and animal alike, or with very little difference distinguishable.

What the original symmetry and active powers of the ox or sheep were, we may imagine, but cannot well describe. The departures from the original are obviously very diversified in all our native breeds. That they have become hereditary is manifest, from the fact that they are handed down from sire to son, or from one generation to another. But, while this must be granted, it is likewise the subject of daily observation that, when animals are properly fed and attended to in other respects, an improvement takes place in their symmetry and active powers, so as to approach nearer to the original; that this improvement is more largely developed in some individuals than in others; and that certain organs and regions of the body improve faster or in a greater degree than do other organs and regions of the body.

This diversity in the departure from the original type, and in the tendency to return to it, affords a wide and promising field for the selection of animals to operate upon, in the improvement of their breed. Hitherto, improvers have fallen into more than one erroneous course, both in their selection and subsequent work, as has already been shown in reference to the extraordinary value they put upon fat. Almost the same conclusion applies to the breeding of dairy-cows, too much attention having been paid to quantity of milk, and too little regard to quality. Both these selections are unhealthy, abnormal types, and now almost unanimously acknowledged to be movements in a wrong direction, ruinously unprofitable in times of contagious disease, as the recent and present visitations of lung-disease and rinderpest prove.

The tide of opinion, however, is now fairly turned; for the universal demand of consumers is for rich meat and milk, which, practically applied, means the highest degree of constitutional health in the animals that produce such articles of daily consumption; and we need hardly add that the determined demand of the public must eventually be attended to by producers, for more reasons than one, a higher standard of constitutional health being as needful for farmers as the public. The practical difficulty, therefore, lies in getting out of the present erroneous and unhealthy course into the right and healthy one. Shall we commence with our thoroughbred cattle, whose health has been injured by the forcing system? or with our native breeds, whose health has been less or more constitutionally injured from the changing vicissitudes of our climate and its productions? Our Shorthorns *versus* our West Highlanders, for example? our Leicesters *versus* our mountain sheep? and so on. In point of fact, both these selections have already been made, the work of improving the health of cattle being already in active operation, as previously stated. The question which naturally follows, as to which is the best and most profitable, is one whose solution must be left to the experience of the future to solve, owing to the difficulty of determining the quality of meat, on the one side, and the pecuniary profits, on the other.

A FIRST-PRIZE STOCK-BREEDER.

THE VETCH, OR TARE: ITS USES AND CULTIVATION.

The importance of this plant, supplying as it does a large amount of succulent and valuable food, can scarcely be overestimated. It is highly relished by all the domestic animals, horses, cows, sheep, and pigs, and is in an eminent degree nourishing. Coming in at an early period of the season, and thus giving the farmer an opportunity of growing another crop on the same land that year, it may fairly be considered one of the most valuable forage plants cultivated by modern agriculturists. When a little pains is taken with its culture, the land well stirred and cleaned, and manure applied with no sparing hand, the vast amount of rich food yielded by an acre is truly astonishing. The mower, in the emphatic language of Scripture, may "fill his bosom" at every stroke of the scythe; and from the day he begins to cut such a crop, food in abundance is within reach of the farmer for every description of stock.

COWS.

As a highly useful and important auxiliary food for dairy cows during the months of May, June, and July, the vetch probably stands unsurpassed. The flow of milk is not so materially increased as might be imagined from the use of such rich and succulent food; but the supply from each cow is for the most part sustained in undiminished amount while the feeding on vetches is continued, which is a consideration by no means to be despised. No one can appreciate this admirable quality so highly, and benefit so much by it, as the light-land farmer during the prevalence of a dry season, or dairyman who has a large stock on a limited range. The only fault such men find with the use of this food in unlimited quantity is the tendency the animals have to put up flesh—a state of matters not at all times desirable by the mere milk and butter producer. The milk from cows fed on vetches is very rich, and produces a large proportion of butter; in this respect being fully equal to oilcake, and from the fact of its being home-grown, and a bulky, filling food at the same time, is infinitely cheaper. During wet weather, if the cows have a wide range when in the field, and the grass thereon be moderately abundant, they will not by any means eat the vetches so greedily or so satisfactorily as they otherwise would: therefore, if straw be abundant, it is a capital plan to keep them in for a considerable portion of their time, when not only will more good be got out of the vetches, but the extra amount of manure made will be a direct gain, and will tell well, and come in exceedingly handy in September, when preparations are being made for sowing the supply for the succeeding season.

We have occasionally seen this system carried out with eminent success, but notably in one instance by a working farmer, whose stock consisted of twenty-eight head, comprising milch cows, heifers, and calves. For ten weeks the whole of these animals were fed in the house on the produce of four acres of vetches, or thereby, never being out all that time but for a short period in the middle of the day, for the sake of exercise, and to take a drink if they chose to do so. When again turned out to grass, on the vetches being finished, every animal was in blooming condition, some of them almost fit for the butcher; and the grass having got ahead, affording a good bite, they kept their condition during the entire season. To all farmers, but more especially to those whose holdings are only of moderate extent—say, from fifty to two hundred acres—such a system offers many advantages.

First: There is the keep of a large number of head, procured from a very circumscribed area, and that keep of the most nourishing and profitable kind, the animals being kept during its continuance in splendid health and condition, and with undiminished produce, and that produce of the very finest quality.

Secondly: The manure made is a most gratifying consideration, and although, in the ordinary acceptation of the term, it is not considered very ornamental, is worth good solid gold, and is as keenly looked after and carefully collected by the intelligent and industrious farmer as if it were already in his purse.

Thirdly: By having a supply of vetches, sufficient for eight, ten, or twelve weeks' consumption, coming on in succession, the first sowing being fit to cut and present to the animals on the very day the last of the winter food is consumed, he is enabled to *hain* or save a much larger proportion of his land for meadowing than under ordinary circumstances he possibly could do. An abundant supply of hay during the winter and spring months is an advantage to a stock farmer that few of them need to be reminded of; but is more fully and acutely appreciated by those who may have now-and-again run short, and had to purchase in the market, or wherever they could most conveniently get it; we shall say only one month's supply, and that the month of April. The amount of hard cash requiring to be expended for even a moderate stock for the short period of one month engenders such a degree of caution in the minds of those who have gone through the ordeal, that they will strain every nerve, and try every plan to avoid a similar *contretemps* for the future; and there is no way it can be so pleasantly and profitably avoided as by seeding a portion of the turnip break with vetches.

Fourthly: The grass fields that have been kept for grazing purposes have got such a long rest, and consequently a good start, that cattle cannot bare them down; and thus to an advanced period of the season, much more so than would otherwise have been the case, the pastures supply a large amount of food to a very heavy stock.

This peculiar advantage of house-feeding during early summer must be experienced to be fully appreciated; the difference in the quantity of available food on the pastures towards the end of the year being so great. Whilst the fields that have been regularly depastured from the end of April or beginning of May begin to fail by the end of September, and would starve a heavy stock by the beginning of November, those fields that were rested during the summer months will carry the stock on to the end of the year, and even to the middle of January, with but little assistance in the way of night-feeding, and give pretty fair produce, and that of the very best quality, during the entire time. For an illustration of this we need not leave the farmer whose system of house-feeding on vetches we have already noticed, and whose cows we have seen grazing in the open field, up to the latest period abovementioned, receiving nothing in the house, during the night, but a little fresh oaten straw, to correct, to a certain extent, the watery nature of the grass inevitable at such an advanced time of the year. Not to overlook a single point, the butter made even in January was of splendid quality, having all the distinctive features of summer-made, and was eagerly sought after by the respectable families in the neighbourhood, when sold fresh; and when salted and sold in open market, was branded "first quality" by the inspector—a most unusual thing in the depth of winter, and very difficult of attainment.

As an assistance to keep fat stock on a little longer, after the winter store is exhausted, vetches come in admirably; and when grown will often enable the feeder to hold his animals over a period of depression, and allow him to make a respectable profit; whereas, had he been compelled to sell, there would probably have been a serious loss. Fat cattle find vetches an agreeable change of food, and eat them greedily; and if they are given at first somewhat sparingly, to allow the constitution to get accustomed to the change, the improvement in condition will be as marked as it was previously. For such cattle vetches are an exceedingly safe article of food, as, however succulent they may be, they will not engender an unpleasant amount of looseness in the animals partaking of them. In this respect they contrast most favourably with mangolds, as, however long *they* may be kept and apparently well matured, no corrective within the reach of the feeder will completely overcome their laxative tendency. Even when the stalls and sheds have been cleared, and the cattle turned out to grass for the season, the importance of having a few acres of tares to fall back on cannot be lost sight of. During the month of May of this present year, when many stock-holders were at their wits-end how to preserve the very life in their cattle, what a relief it would have been to have had a load or two of vetches to take to them on the grass each day, and how joyfully the animals themselves would have welcomed the appearance of the cart, galloping forward to meet it the moment it came in sight. Instead of losing more for the first fortnight, after being put on the grass, than they would recover for the succeeding month, they would have at least held their own, and saved their owner from not only a pecuniary loss, but a world of vexation and anxiety.

HORSES.

As food for farm-horses, tares are particularly suitable; and, when grown in sufficient quantity, are calculated to effect a considerable saving in the way of keep for this particular class of stock. Although it is of the utmost importance to grow a heavy crop—whatever may be the kind of animal for which it is intended—for horses it is doubly important and necessary. There is no food the farmer can place before his horses that they will eat so ravenously as this; and, if supplied *ad libitum*, the quantity they will consume is enormous.

If the seed is merely sown after one ploughing on the stubbles, as is too frequently done, without any preparation whatsoever, an acre instead of feeding five or six horses for a month, as it *should* and *will* do when well treated, will barely last them a week, and the expense incurred for seed and labour are in a great measure thrown away.

With plenty of vetches, without oats or any other variety of food, horses will do the usual summer work of the farm, and at the same time keep themselves in excellent condition, so fond are they of this food that when engaged in carting out manure if a barrow of vetches is kept before them while the cart is being filled, they will require no urging by either whip or voice to mend their pace when under way, and when returning from the field will invariably trot unless restrained by the driver from doing so. While the vetches last, the quantity of manure made by the horses is considerable, and forms a very valuable and welcome addition to the dunghill. For carriage-horses a little vetch mixed with the hay forms a most agreeable, refreshing, and acceptable article of food, and is highly relished by the poor beasts after being so long confined to such dry food as hay and oats. When the journeys they have to perform are not long, it is surprising what a quantity of vetches carriage-horses will eat, without perceptible injury to either the silkiness of the coat or length of wind.

SHEEP.

Where there is a heavy sheep stock, a piece of early vetches is exceedingly useful, and will give an excellent return in the way of profit for capital expended. If the field on which the crop is grown happens to be in low manurial condition the vetches can be eaten off with excellent effect. By a judicious arrangement of the hurdles this can be done without the slightest injury from the treading of the animals: their improvement is rapid, and the field is enriched so effectively as to be able to grow a paying crop of either wheat or barley. If not found desirable or convenient to feed it off on the field on which it was grown, it can with great propriety and excellent effect be carted to either fattening wedders, or ewes and lambs on the grass.

In the summer of 1860, during the prevalence of a few weeks' drought, I was rather short of grass, but fortunately had a few acres of capital vetches. This I carted twice a day to a somewhat poor grass-field, with a thin surface, and exceedingly apt to burn during hot dry weather in summer. The vetches were not placed in hurdles or racks, but merely scattered on the surface of the field, beginning at one end and spreading them regularly until the entire field had been gone over. The stock using them were sheep and a few young cattle; and not only did both descriptions of stock thrive admirably, but the field was permanently improved to such an extent as to have since given at least twice the feeding it formerly did, and moreover retains, summer and winter, the rich green colour acquired at that period from the heavy dressing of manure placed upon it.

PIGS.

Where large numbers of pigs are bred, vetches are almost invaluable, giving as they do an uninterrupted supply of nutritions food for six months in the year. It is generally supposed that pigs are not profitable when supported on food raised especially for their use. That this is true to a certain extent we admit, particularly where badly-bred animals are kept; a badly-bred pig giving but a poor return whatever he may be fed on. When pigs worth keeping are fed on vetches the profit derived will be as much as could possibly be obtained from any other description of stock on the same amount of food. Although pigs will fatten on vetches, it is with stores that most benefit is derived from their use. A sow of the largest size requires no other food whatsoever when carrying her young; if supplied with vetches, and even after they are dropped, the same food with the addition of a morning and evening drink of milk or whey will enable her to rear her young, keeping both herself and them in excellent condition, the litter bringing in these days of big prices probably 20s. each by the time they are six weeks old. If there is any description of stock that will leave a large return it is certainly well-bred pigs, fed in the way now described, and sold off the farm when young.

Notwithstanding what is often said to the contrary, we find from our own experience that there is no way vetches will be relished by the whole of the domestic animals, and eaten with so little waste, as by giving them immediately after being cut. For years we have cut the morning's supply in the morning, and so on during the day, cutting the supply for each meal just a few minutes before it was required to be given to the animals, and have never found any injurious result therefrom. When the weather is wet it is advisable to cut them a few hours before being placed before the animals, to allow a portion of the superfluous moisture to escape; but when cut dry there is not the slightest danger to any description of stock. It is a good plan not to place too much at a time before them, but only as it is consumed, when not only will there be less waste, but the animals will eat it with a vastly-increased relish.

PREPARING THE LAND.

In preparing the land for growing a crop of vetches, it is too often considered that the mere turning over of the stubbles, sowing the seed, and harrowing it in, is quite sufficient cultivation. Such management is about the most short-sighted policy that could well be carried out by the rent-paying farmer, as the return obtained from such treatment is, unless under exceedingly favourable circumstances, scarcely worthy of consideration. The stock that an acre of vetches well treated will feed for a month would scarcely exist for one week on the same extent sown without preparation; and, moreover, from having nothing under them to feed and force them into early growth, they run so late into the season before they are fit to cut that the entire advantage of autumn-sowing is lost, and the object of the cultivator defeated. It may therefore be fairly considered that one acre of vetches well-manured and the soil well-prepared will give as good, if not a better return, than four acres carelessly or indifferently cultivated, thus effecting a very considerable saving in the matter of seed, amounting in the majority of seasons to not less than 20s. per acre. Surely such a saving, even counting nothing for extra time and trouble expended, is important enough to be taken into serious consideration by all farmers who are in the habit of growing vetches. It requires, however, but very slight observation to show that they do not in general do so. On every hand this crop may be seen untouched by the scythe until June; and even at that advanced period of the season such a breadth has to be gone over for a cart-load, as to render it scarcely worth the trouble of cutting. To get a heavy crop of vetches, the land intended to be seeded should be well grubbed, whenever the corn is cleared in September; if it can be done in August so much the better. Two strokes of the grubber will have the double effect of stirring the soil and bringing whatever weeds may be present to the surface, where (the sun being still powerful) they are quickly deprived of their vitality.

Not less than thirty tons of dung per acre must now be carted on to the land, evenly spread, and ploughed in with rather a light furrow, the previous application of the grubber or cultivator rendering deep ploughing quite unnecessary. If the breadth proposed to be seeded is extensive, there may, on farms where turnips are grown extensively, be some difficulty in procuring such a large quantity of manure so soon after the yards have been cleared out. In this case less dung would do, and a few cwts. of guano or superphosphate could with great propriety be substituted for the deficiency. This can either be sown along with the seed, or its application can be deferred until spring, more particularly if the land is in moderately good heart.

When cattle are a good deal house-fed during summer, and an abundant supply of green food provided for their consumption, there will not generally, on arable farms, where straw is abundant, be much difficulty in having a plentiful supply of manure every part of the year. The grubbing will have made the soil so fine that none of the seed will get lost by running down under the furrow-slice, no apertures existing by which it could do so. There will be more danger of a portion being left on the surface uncovered, or only partially so, and being carried off by the wild pigeons, which in wooded districts are sure to to pay the field a visit, and do a good deal of mischief unless scared off, tares being a favourite food of all pigeons, whether wild or tame.

Where the soil has been rendered so fine as to afford scarcely sufficient covering for the seed, it is an excellent plan to plough the land into beds or stetches of fourteen feet in width, softening the furrows thus made by a few turns of the skeleton plough, and spreading the loosened soil equally on each side of the bed. By this plan not only is the seed properly covered and protected, but the land, by a most elaborate, though inexpensive system of surface draining, is laid thoroughly dry, and the crop in consequence immensely benefited. So noticable is the advantage, that where the land is even slightly retentive, the crop grown in beds will be fit to cut from ten days to a fortnight earlier than if sown broadcast. With the view of obviating to some extent the tendency this crop has to come in with a rush, and entail considerable loss from rotting at the bottom when unable to be used, it is well to vary the seed-time as much as circumstances will permit. If possible one-third of the proposed autumnal sowing should be got in during the last week of August, or the first week of September, one-third about the 20th of September, and the remainder between the 10th and 15th of October. From the uncertainty of the weather it is seldom the farmer has it in his power to time the sowings exactly as he would like; but it is most desirable that at least two sowings should be made, and few seasons are so unpropitious as to prevent its being done. The early sowing may be calculated on to almost a certainty to come in by the 1st of May, if the season is an early one even as early as the 26th of April, when the treatment has been liberal. The whole autumn-sown crop will run on until the 1st of July, by which time it should be all cleared, so as to get the turnips sown in good time to secure a full crop.

The vetches not having been permitted to seed, the manurial condition of the land has not been in the slightest degree reduced, and the succeeding crop of turnips will be consequently quite as good as if the land had lain idle during the winter.

Yellow or white turnips may succeed the first sowing of spring vetches, but it is better with the late sowings (which may be continued until the first week in June,) to clean the land, turn it over, and let it rest until the wheat season comes round. While the early crop comes in handy, and is eminently useful for milk cows, supplementing the roots, and improving, to a most gratifying extent the quality of the dairy produce, the later-sown portion comes in not less convenient, and affords a most valuable and nutritious food for those beasts which have been taken off the grass in August and September, and tied up in the stalls to fatten. Vetches are a food which all cattle take to at once; and their fattening qualities are so good that the heaviest animals will improve in condition whilst vetches are supplied to them.

The quantity of seed required for a statute acre is about 2½ bushels. Rye is often sown with it, with the view of improving the forage and keeping the vetches from falling on the ground, which when a heavy crop from the extreme softness of the stalks they are very apt to do. After many years' experience we find oats to suit much better for this purpose than rye, being softer in the straw, and not so early in ear, and invariably use it, with the very best results. A small bit of rye sown by itself on rich land, to come in early as an appetizing food for horses that have been all the winter on hard food, is useful, and will repay the trouble and expense incurred in growing; but for mixing with vetches, it is incomparably inferior to oats. It is in ear, and the straw getting hard, while the vetches are in their prime, and all animals, with the exception of horses, refuse to eat it.

By putting, say a bushel of oats to the acre, the vetches will not only, under ordinary circumstances, be well kept off the ground, but in consequence of the corn over-topping them, such an admirable protection is thereby afforded as to enable them, to stand uninjured during the severest winters, and even to be grown on exposed situations where their cultivation could not otherwise be attempted.

ROMNEY MARSH.

Having recently spent several days in travelling over Romney Marsh, and gained an insight into the system of husbandry practised there, it will perhaps be interesting to some of your readers to present them with an account of this fertile and otherwise remarkable tract of reclaimed land. The period at which it was first wrested from the ocean is lost in the lapse of ages and the absence of ancient records and traditionary history. The most probable conjecture is that its first reclamation was due to the Flemings, to whom such works were congenial, and who undertook many of them in England at a time when the islanders were quite unacquainted with the best mode of proceeding.

Romney Marsh consists of a tract of land containing 52,000 acres, defended from the sea by a dyke or embankment about eighteen feet high, and about the same width on the top, sloping both towards the sea and the land. It is justly esteemed one of the richest tracts of land in the United Kingdom, and has evidently been reclaimed at different periods, the last having occurred in the reign of Henry VIII., when the sea retired nearly two miles from New Romney, which had previously been one of the Cinque Ports, with Lydd, from which it is 2½ miles distant. Romney Marsh is ten miles in length from the upland to the sea-coast, and five miles in width. It is separated from the upland part of Kent by a canal that was constructed about the beginning of the present century, at the recommendation of the Duke of Wellington, as a protection in case of invasion; but what earthly use it could be in such a case it would puzzle any one to discover. At present it is used for barge-navigation, in the conveyance of coals, stones, bricks, and timber. Other goods, the produce of the Marsh, were formerly conveyed to London and other markets by this means; but the railway now carries all but the heavy goods enumerated.

The soil of Romney Marsh is of different texture, that portion towards the Kentish highland being a rich deep loam of a stiffish character, but easily worked and wonderfully productive. That part next the sea, for a few miles inward, and which was left by the recession of the ocean in the time of Henry VIII., is light and shingly, and from its great fertility must contain a large portion of organic matter, such as shell-marl and other marine debris. It is equally productive with the loam, and both yield heavy crops of wheat, oats, clover, roots, &c. A large breadth of the land is occupied annually in growing seeds of turnips, mangold wurzel, and other plants, for the London seedsmen. They generally succeed well, as the continuance of the culture indicates. The crop of turnip-seed may be estimated to average from 25 to 30 bushels per acre, but sometimes reaches 40 bushels or upwards; but this is an extreme produce, and we are told that it is more frequently under 20 bushels than above it. The present growing crop is a deficient one, owing to the wetness of the winter; and many of the growers will not reap more than from 8 to 12 bushels per acre.

But the great object of the Marsh farmers is sheep-grazing, an overwhelming proportion of the land consisting of rich pasture, on which are fed an amazing number of large sheep of that peculiar breed named after the district the "Romney-Marsh breed." These sheep fatten up to forty pounds per quarter at two years old, and yield a fleece of from twelve to eighteen pounds of wool. They are of course bred on the Marsh, but it is a singular fact that the farmers cannot keep the lambs alive there in the winter. The wetness of the soil and the cold bleak winds chill them, and produce the foot-rot. In consequence of this, it is the universal practice to send the lambs to the upland farmers of Kent and Sussex in the month of October, and in return take in a number of lean young cattle, to eat up the old fog left from the summer grazing, of which there is always plenty. In March or April, according to the season, the re-exchange takes place, this friendly operation proving a mutual advantage. The chief portion of the Marsh is drained, but the fall for the water is so very small that some of the lower parts of the land are frequently water-logged after heavy falls of rain or snow. It is, however, in contemplation, to employ steam-power in aid of the drainage, by which means the level of the water in the water-courses can be lowered to any extent required. The cattle fed on the Marsh are chiefly the Sussex breed, and they thrive rapidly, and those taken in exchange for the lambs are generally much improved in condition when they leave in the spring. It is worthy of notice that the rinderpest has not made its appearance at all on the Marsh.

The Romney Marsh sheep are very similar to the Lincolnshire breed, except in being larger in the carcase, and shorter and closer in the fleece. They are also distinguished by a long tuft or top-knot of wool in front, which gives them a singular appearance. There is no record to show where or from whence this breed of sheep had its origin, but it was preserved in all its purity without any admixture until the last few years, when a cross with the Improved Leicester has been tried, by which a very superior type has been obtained, not at first, however, hardy enough to endure the coldness of the climate of the Marsh, but much improving in this respect as it becomes acclimatised, but the loss in lambs for the first year or two was very great. The farmers generally kept the original Marsh sheep till they were three years old, but the half-bred sheep are fit for the butcher at two years. Although there is no account of the origin of the Marsh sheep, it may probably have been derived from the same stock as the Lincolnshire, namely, a Dutch breed which is mentioned by Worledge, an old author, as of large size, and desirable to be introduced upon the low marshy ground. This is also supposed to have been the origin of the Teeswater breed. The peculiar features of the Romney Marsh sheep are, a wide loin, a sharp chine, a narrow and rather shallow breast, a large belly, a good clift, a thigh full and broad, carrying the chief weight in the hind quarters, a tail thick, long, and coarse; thick legs, large feet, a coarse muzzle, large bones, wool of a good combing quality. The mutton, as we have reason to know, is the best of any of the large breeds, and they are favourites with the butchers on account of their heavy *proof*. After the first year (when they are wintered on the uplands) they require but little care, and have seldom any other extra food than a little hay, in addition to the pastures, the year round. When crossed with the Leicester, it must be confined to a simple strain; for if a half-bred ewe be put to a Leicester ram, the stock would be deteriorated, and its powers of endurance destroyed. Although the cross-bred Marsh sheep are subject to the rot, *they fatten faster in the first stages of the disorder*; but if not then killed, they soon begin to lose flesh, and rapidly decline. This peculiarity attending the rot was known to Bakewell, who is said to have been in the habit of flooding his pasture-land, and immediately after drawing off the water, putting his fatting sheep upon it, which then contracted the rot. By this means they improved so fast that in four or five weeks they were fit for the butcher.

Some of the Marsh farms are very large, and the occupiers are mostly wealthy men, apparently none the less healthy for the bleakness of their country in the winter. The land is very valuable, and sells in small allotments at from one hundred to one hundred and fifty pounds per acre, the rent is from £3 10s. to £4 10s. per acre; not too much for land that never requires artificial manure, nor any regular course of cropping as is practised on farms of ordinary fertility. Inquiring of a farmer what was considered an average crop, the reply was, "We never talk of our crops unless they are bad ones, and then everybody knows it." We learned, however, from another that they were not satisfied with *less* than six quarters per acre, and that they sometimes reach ten quarters. From some cause that has not been accounted for, a large quantity of the land of the Marsh has changed hands during the last few years, and has mostly been purchased by Marsh farmers, and none know the value of it better, or how to manage it to greater advantage.

Romney Marsh is governed by a distinct and entirely local jurisdiction, consisting of a mayor, twelve jurats, a chamberlain, and a recorder. The seat of government is at New Romney, situate about the centre of the Marsh, and has a Brotherhood-House or Hall, where the authorities meet to transact the general affairs of the Marsh. This town was formerly a considerable place, and contained five churches, a priory, and an hospital, being also one of the Cinque Ports. Up to the reign of Edward I., it was a very flourishing seaport, but at that period part of it was destroyed and the haven choked up by a violent storm and convulsion of nature. The receding of the sea in the time of Henry VIII. completed the ruin of New Romney as a seaport, it being now two or three miles from the shore. At present it contains only one church and a market house. Old Romney situate about two miles westward of New Romney, is now a small village, with a church, and a few houses, occupied by an agricultural population.

THE OLD NORFOLK FARMER.

THE HIGH PRICE OF BUTCHER'S MEAT.

The discussion at the last meeting of the Farmers' Club was of some importance, not only to the agriculturists of the kingdom, but to the public at large. There is an opinion generally entertained that the high price of butcher's meat is not justified by the actual state of the cattle market, and that the butchers have taken an undue advantage of the losses sustained in cattle by the farmers to raise their prices, under the pretext of a scarcity. That heavy losses have been sustained by the farmers and graziers in most parts of England is undoubtedly true, as many have been ruined by the disease; and if the advanced prices charged for meat were received by the sufferers or by those who are still able to send healthy cattle to market, the public would have no reason to complain. But the fact is, the farmers do not reap the benefit of the advance to the extent they ought, as a glance at the wholesale price of meat at the Metropolitan Market will prove. Indeed, the supply of live animals, both foreign and home-fed, has for some months been increasing largely, the former on account of the high price and increasing demand, and the latter in order to get rid of the risk of keeping them. On examining and comparing the increase in the importations with the losses sustained by disease, the former will be found greatly to predominate; especially if we add the excess in the imports of sheep and pigs to the account, the number of the latter that have died from disease being not much more than in many ordinary seasons.

It appears, by the returns up to April 28, that the number of cattle attacked by the disease since its first appearance is 229,669, of which 30,898 recovered, leaving a balance of 198,771 to be considered lost to the owners and the public, which, however, was not the case, because a considerable number (13,747) are unaccounted for; and many of these were slaughtered, and went into consumption. We therefore think we may fairly reckon the dead loss at 190,000 during the three years the disease has been raging. If we examine the imports of cattle and sheep in the same period, we shall find the *increase* over the previous three years amounts, in cattle, to 248,580, and of sheep to 908,587. Thus:—

	Cattle.		Sheep.
From 1860-2 ...	309,352	From 1860-2 ...	932,614
„ 1863-5 ...	557,932	„ 1863-5 ...	1,841,201
Excess in the latter	248,580	Excess in the latter	908,587

Now if we estimate the weight of the cattle brought to market at 50 stone (of 14lbs. each), and the sheep at 30lbs. per quarter, it will give six sheep to one bullock. We must therefore divide 908,587—the number of sheep—by 6. We have equal to 151,431 bullocks, making an aggregate increase in the imports of 400,000 to set against a loss of 190,000 by disease, and an increased consumption—if any—during the last three years. We have not included in this amount the increase in the importation of pigs—172,520—nor that of *dead meat*, no account being taken of this latter; but on the whole, it is evident that the market has been quite as well supplied, or at least as largely, as ever, and the price current shows the same, there being no proportion between what the grazier receives for his live bullock and the price charged by the butcher for the same dead. According to the price current of Newgate and Leadenhall markets for May 28th, beef ranged from 3s. 4d. to 4s. 8d. per stone (8lbs.) by the carcase—say from 5d. to 7d. per lb; whilst the butchers are charging from 8d. to 11d. per lb., and for some parts 1s. and 1s. 1d. per lb.

It is to be hoped that when the new dead-meat market is opened in Smithfield, the farmers will be allowed to sell their carcases direct to the butchers. A farmer lately sent to a salesman a remarkably fine lot of mutton. On its arrival, the consignee wrote to the owner to say that the meat had heated, and would not fetch more than 4d. per lb. It so happened the brother of the farmer passed the shop where the mutton was exposed, and, being struck with its fine appearance, inquired the price, and where it came from. He thus learned that the butcher had given 9d. per lb. for it, and his brother's name was given as the grazier. He communicated with the latter on the subject, and the producer immediately served the salesman with a notice of action. The man, fearing exposure, offered first £10, then £20, £30, and finally £40 to stop proceedings, which last-named sum the farmer agreed to accept, and the affair, to the injury of the public, was hushed up. We have known similar cases in other trades; but the grazier is particularly liable to suffer from such dishonesty if he lives far from town, which he seldom visits. It is therefore nothing more than just that he should have the option of selling his own property in the open market, as well as the Manchester or Birmingham manufacturer.

The uncertainty that prevails respecting the duration of the rinderpest, deters the graziers from purchasing even their usual complement much more an increased number of cattle. This does not apply to sheep, and of all animals perhaps these at the present time are the most profitable, and the least troublesome to keep. We have heard of tegg fleeces of long wool selling for 35s., while mutton is in constant demand at remunerating rates. The stock of sheep in the country is, fortunately, as large, if not larger, than ever; and while it remains so profitable there is no fear that it should decline. On wet, undrained lands, it is not possible to keep sheep to advantage on account of the rot; but wherever the land is drained, or naturally dry, we believe they will pay better than any other animal, and with much less trouble and expense. As to swine, they are so prolific, and are kept, while young, at so small an expense, that a large amount of food may be raised from them in a comparatively small space of time. They also will pay well for their keep, and the higher they are fed the sooner they will give a return.

It is therefore clearly the farmers' interest, while the cattle-plague is rife in the country, to cultivate the smaller stock, both as the most profitable and the least liable to disease. On the cold and undrained lands sheep are subject to the foot-rot in the winter; but the owners may avoid this if, like the Romney-marsh farmers, they send their lambs in October to the high lands in their neighbourhood for the winter, and get them back again in March or April. By this means they keep large flocks of their own peculiar breed of long-woolled sheep, and seldom lose any by the foot-rot, except the summer is very wet. How long the rinderpest may remain in this country is a question none can answer. In the last visitation it remained twelve or fourteen years. It will soon be seen whether the return of warm summer-weather will tend to again revive it; but the graziers are now prepared to meet it with vigorous measures, which, it is to be hoped, will mitigate its extent and severity.

THE POTATO CROP.

We have had an almost unexampled season for putting in the potato crop, and it has continued up to this very day, May 31st. The drought was so excessive that in numerous cases it was impossible to get the soil into a proper state; hence many "plantings" or "settings" have been amongst clods almost impenetrable, and there they have lain awaiting rain to cause the sets to grow. The copious showers now falling will, I trust, effect this long-delayed result; and it is to the subsequent culture after such a season that I desire to give a few hints or suggestions. I take it for granted that the farmer in every case has been anxiously waiting for a favourable time to take action to subdue these clodding hindrances to his purpose of moulding-up. Let him, then, instantly make every effort to pulverize them before they become dry again. For this purpose every ridge-harrow, ridge-plough, horse-hoe, and scuffler should be put into requisition. Never mind other work: the potato crop must have a mould prepared for moulding-up, or woe to the crop. The ridge-harrow is the best implement for breaking down the clods after a plentiful rain. I mean the expanding V-shaped harrow, armed with sharp strong tines along the "bulls." It is one of the most useful implements we have as applied to ridge culture, and no farmer who adopts the ridge system ought to be without them: the cost is trifling. This harrow should be drawn between the ridges where clods abound, whether the plants can be seen or not. It is only requisite to set it narrow, so as to avoid pulling out the potato sets. The object is to pulverize the clods. Horse-hoeing, where the plants are visible, might follow in a day or two. The horse-hoe in cases of ridge culture must be provided with side *curved* cutters, to pare the sides of the ridges. Hand-hoeing should then be done, and ridge-harrowing should follow as soon as convenient. It not only breaks the clods, but it tears up the weeds, and keeps all the soil between the ridges in an open and friable state. In all cases where it has been found that owing to the untoward season a sufficiency of mould cannot be obtained, it would be right, and perhaps necessary, to subsoil-plough between the ridges, thereby breaking up fresh mould. This operation should take place immediately after the first ridge-harrowing; it not only breaks up and provides fresh mould for moulding-up, but it makes a deeper and partially opened subsoil for the especial benefit of the growing crops; and should a rainy season set in, it is of great value in drawing off superfluous water from the growing potatoes; it also slightly moves the whole ridge, thereby causing the plant to throw out fresh fibres or roots more vigorously. This order of pulverizing or preparation of the soil between the ridges for moulding-up should proceed till the plants are tall enough to be moulded-up, at least partially; for moulding-up should be done at twice. The moulding-plough should then be set to work, and the moulding should be partly done so as to leave the plant at full liberty to increase and extend. If nicely done in this way, it will be found that nearly all the clods will fall back into the space between the ridges, and the loose and well-prepared soil alone remain around the potato plants; the clods can then again be subjected to the ridge-harrow, and are thus prepared for the final moulding-up. In closely following up some such system as this, the potato crop may be advantageously and properly managed, notwithstanding the difficulties to be overcome. If the clods are too hard for this invaluable rain to soften, other means must be resorted to. A good-sized Cambridge or Crosskill's roll will accomplish the crushing between the ridges. For this purpose the requisite number of the sections or iron-peripheries must be removed from the axle, and boxes or bosses put on instead, so as to separate the crushing-wheels or perephiries sufficiently apart to fit the spaces between the ridges; in this way the roller would take three spaces at once, and it may be worked with either two or three of the wheels according to the width to be crushed. A common broad-wheeled dung-cart does very well; the wheels act as crushers as the cart is drawn along the ridges. This is a slow process, as it only takes two spaces at a time, but it does it well. It is no uncommon thing to break them small with sledge-hammers or large wooden mallets ("beetles"); but this course is slow and expensive, as a man would not complete much in a day. One thing is universally allowed—*i. e.*, they must be broken in some way, or the potato plants can never be profitably moulded-up. It is therefore good policy to watch every opportunity to effect this object as inexpensively as possible. It is only in dry seasons like the present that these extraordinary courses are pursued. In the majority of seasons a good and finely pulverised mould can be obtained. Then, of course, all these adventitious aids are not required; but all is free open working at the pleasure of the cultivator. I have chiefly adverted to plantings done upon ridges. It is because a crop of potatoes upon ridges may, by subsequent and judicious culture and management, be secured, notwithstanding the cloddy condition of the soil, after the manner I have suggested; but if the "setting" is upon "the flat," *i. e.* ploughed-in, the soil must be in a better state than is absolutely necessary for setting upon the ridge system. If ploughed-in, the ploughing must necessarily be at shallow depth. The sets will have difficulty in forcing their shoots through, if ploughed-in deeply, and they come up weakly. If, therefore, the sets are ploughed into a cloddy soil at shallow depth, they will be very imperfectly covered, and very many will dry up wizen, and never vegetate. If too deep, the sets will be on the furrow sole, without the power of much expansion. Potatoes require a loose friable soil, through which the root fibres can freely find their way, and the tubers can be easily formed: hence ridges are for the most part to be preferred. The sets even in a cloddy soil get well covered; and if the ridges are rolled down immediately, they will safely rest from drought for weeks, or it may be till rain causes them to grow. It may be said that, upon the ridge system the sets are deeply covered. It is so if properly done, but then they are planted upon the fold-yard manure in the rows, which keeps the ridges in some degree open, and generally with a good dressing of artificial manure in aid; and as the plants attain a moderate growth, horse-hoeing and hand-hoeing should commence. These operations lower the ridge considerably, and thus greatly promote the growth of the plants. They should also be often repeated, as frequent stirrings promote progress. When sufficiently cleansed by hoeing and weeding, and the plants have attained a strong growth, it is very desirable, as I have already suggested, to mould them up rather slightly, taking care not to make use of all the mould between the ridges. In this state they should be left to grow for three or four weeks, till they nearly cover the surface of the land, when the final moulding should take place. This should be so effectually done that the potato plants are all supplied with mould up to the very point of the ridge, taking care that none are covered up. Many crops are greatly injured by improper moulding. This operation should be done by a competent man, and a good implement. Many cultivators mould up partially and presently draw the greater part back by the horse-hoe, to be again and again moulded up. This is, I think, the best practice; but capital crops are obtained without such extra work, and which the farmer is not at all times able to attend to. If the stems are much too numerous the yield will consist of a large proportion of small tubers unfit for "ware." To obviate this, it is not unusual to draw up a few stems from each planting. The remainder will produce larger tubers, and amply pay the expense. The operator should carefully place his foot to the planting before he draws the spare stems, or frequently the whole comes up together. Good judgment is requisite in all these minor matters.

THE AGRICULTURE OF NEW ZEALAND.

Undoubtedly the first and most important considerations in estimating the value of a country for the purposes of colonization relate to its climate and soil, and its capacity for yielding those agricultural products which are necessary for sustaining its population. That New Zealand possesses in an eminent degree all the conditions, both of climate and soil, suited to the production of the most valuable fruits of the earth, needs no further evidence than the marked progress in agriculture that has taken place during the few years of its existence as a British colony. The rapid development of the agricultural resources of New Zealand is one of the most satisfactory proofs that can be afforded of its prosperity. And when the many difficulties which beset the first occupants of the uncultivated plant are taken into consideration, the rate of agricultural progress which has been already attained will bear a favourable comparison with that achieved in any other British colony. All the modern appliances of the farm are being called into requisition, and the rapid increase of the population, with the consequent heightened demand for produce, is annually causing largely increased areas of wild land to be cultivated. In 1858 the total area of land enclosed amounted to only 235,560 acres; whilst in 1864 it had increased to more than a million acres. In 1858 the extent of land under crop was only 141,008 acres; but in 1864 it amounted to 381,526 acres.

Thus in six years the area of enclosed land increased by 450 per cent., and that of land under cultivation by more than 200 per cent. Turning to the cultivation of grain, we find that, in 1858, 13,710 acres were under wheat, and 15,514 acres under barley and oats. In 1861 the area devoted to these cereals had increased to 29,531 acres of wheat, and 19,329 acres of barley and oats; whilst in 1864 the area was 25,513 acres of wheat, and 55,609 acres of barley and oats.

In 1858 the colony exported grain and flour to the value of £23,186; in 1859, £42,075; in 1860, £14,366, but gradually declining as population increased during the succeeding years, until in 1863 the exports amounted to only £1,160, and in 1864, £722. In addition to the above figures there were exported, during the years 1853 to 1857 inclusive, grain and flour to the value of £215,925; whilst from 1853 to 1864 inclusive potatoes and onions were exported of the total value of £301,025.

Of the capacity of New Zealand as a wheat-growing country there can be no doubt. On the rich alluvial flats of the North Island, and on the fertile plains of the Middle Island, crops of wheat and other grain are grown, which vie in luxuriance with the highly-farmed corn-fields of Great Britain. Hitherto the cultivation of wheat has not been followed so extensively as that of other grain crops; although a considerable area of land has been placed under wheat in Canterbury and Otago. In both these provinces and in Southland there are large tracts of agricultural land capable of producing as good crops and as fine wheat as are to be met with in Great Britain. The yield of wheat per acre in New Zealand exceeds very considerably that of the other Australian colonies. Thirty to thirty-five bushels per acre may be taken as a fair average throughout the colony, although much larger returns are by no means uncommon. Fifty to sixty bushels to the acre are frequently produced; and as high as seventy bushels have been obtained in Otago and Canterbury. This extreme prolificness appears almost impossible when compared with the yield in the other Australian colonies. The average yield of wheat per acre in England is about 30 bushels, in Scotland 26 bushels, in Ireland 24 bushels, and in America and Canada about 25 bushels. Mr. Archer, the Registrar-General of Victoria, gives the yield of wheat, for a period of twenty-five years ending 1863, as being 20¾ bushels per acre. Mr. Rolleston, the Registrar-General of New South Wales, reports that the yield of wheat in that colony has ranged from 12½ to 16½ bushels in five years—1854 to 1858, both inclusive; the average being a trifle over 15 bushels per acre. The average yield for seven years in South Australia is only 11 bushels 46lb. per acre; whilst in Tasmania the yield for five years averaged 18 bushels 31lb. The following table compiled by an eminent Australian statist gives the highest and lowest averages of the produce of wheat per acre in the four principal Australian colonies embracing a range of 14 years for Victoria, 9 for New South Wales, and 5 for the other two:

		HIGHEST.		LOWEST.	
		Bushels	Lbs.	Bush.	Lbs.
Victoria 1858		20	36	1863.. 8	4
New South Wales, 1856		16	33	1863.. 7	47
South Australia ...1863		14	0	1859.. 9	38
Tasmania 1860		21	10	1859.. 17	36

Barley has not hitherto been extensively grown in New Zealand; but now that a large demand exists for it for malting purposes, the breadth of land devoted to this cereal is being increased. The province of Nelson undoubtedly stands foremost amongst the New Zealand provinces in the production of barley.

Otago and Canterbury are the great oat-growing provinces; the area of land devoted to this crop by these provinces in 1864 being respectively 20,800 and 14,600 acres. Very heavy yields of this crop are obtained—over ninety bushels per acre of black Tartarian oats having been reaped in Canterbury, and almost as large a yield has resulted in the Taieri and Tokomairio Plains in Otago. Forty-five bushels per acre is a fair average yield. Maize can scarcely be considered a standard crop in New Zealand. It is only grown in small patches, chiefly by the natives, in the warmest districts of the North island.

Potatoes are nowhere produced finer in quality, nor in greater abundance, than in New Zealand. They grow equally well in the light, rich, volcanic soil of Auckland, as in the fertile alluvial soil of Otago. The yield varies from ten to twenty tons per acre, and higher results have been obtained in specially favourable soil. It is a fortunate thing that the disease, which has played such havoc in Europe, has not yet made its appearance in New Zealand; for the potato is almost as necessary to the Maoris as it is to the Irish peasantry. The natives are extensive cultivators of this esculent; whilst the importance of the potato crop to the New Zealand agriculturists may be gathered fróm the fact already stated, that during the ten years from 1854 to 1863, both inclusive, the value of the potatoes and onions exported from the colony amounted to £301,025.

New Zealand is preeminent amongst the Australasian colonies for the suitability of its soil and climate to the growth of cultivated grasses. Auckland and Taranaki are celebrated for the luxuriance of their cultivated pastures. In the neighbourhood of Auckland there are meadows, which for luxuriance are equal to anything to be seen on an English farm; whilst in every province artificial pastures constitute one of the most profitable branches of agriculture. Mr. Wild, the present Premier of New Zealand, in his useful pamphlet on "New Zealand Sheep Farming," says that "there is a good deal of land in New Zealand, which, when grassed and fenced, will keep eight sheep an acre all the year round, and be proportionately good for cattle."

The annual increase in the breadth of land sown down in grass is very remarkable. In 1851 there were but 16,000 acres of land in cultivated grass, whilst in 1858 there were nearly 100,000 acres, and in 1864 over 271,400 acres.

Hops are grown successfully in the Province of Nelson, there being a rather extensive hop ground near the city of Nelson.

With regard to the cultivation of horticultural produce, it may be said that every description of garden-produce grown in Great Britain will flourish luxuriantly in New Zealand; whilst many things which in England requires forcing and protection will grow freely in the open air. Turnips, carrots, and all root and vegetable crops are very prolific in New Zealand, and of the finest quality. Thirty-five tons per acre of turnips is not an uncommon yield. Specimens of the white Belgian carrot have been shown at the horticultural shows, weighing as much as nine pounds; and cabbages have been grown in Otago weighing from 40 to 50 lbs. each.

THE CARCASE TRADE.

Although the Royal Commission has up to this date failed in discovering the cause of cattle-plague and what cattle-plague really is, it has gone through an immense amount of labour in the investigation of the different branches of the subject, for which it cannot fail to receive the hearty thanks of the public, more especially of the agricultural body. On many points the Commissioners have been enabled to arrive at satisfactory and definite conclusions, both in a practical and scientific sense, and one of these conclusions is the adoption of an exclusive dead-meat trade, with the least possible délay on the part of farmers, butchers, and all engaged in the great work of supplying the public with animal food.

The quantity of animal food consumed in this country, and the consequent dependence of the public upon a proper supply, renders its commerce a subject second to none in importance at any time; but at present, when rinderpest is devastating our herds, when cholera is again threatening our densely-populated towns, and when the general health of the country and even the degeneracy of the human race are engaging the serious attention of the medical world, it assumes a much greater magnitude. To those who never think of measuring their own health by the quality of the food they daily consume, the grand question at issue may appear one of indifference, comparatively speaking; but even by such narrow-minded people, the pressing exigencies of the times are beginning to be felt as a wholesome and instructive lesson—one to which they cannot much longer turn a deaf ear, as they have hitherto done. On the other hand, to those who can take an impartial and intelligent view of the subject, and who can perceive how much the general health and industrious welfare of the people depend upon the quality of the meat they daily consume, the conclusion of the Commission will be appreciated in its true national sense and meaning; for there cannot be a doubt that much of the increase of mortality, as also of a degeneracy of race and of a greater predisposition to contagious diseases, is due to the inferior quality of the food consumed, coupled with the disease-breeding matter attending the slaughter of live stock in towns, the immense amount of putrefying offal always on hand, and the unhealthy occupations to which the present system gives rise. And this, too, is not the worst of it; for this unhealthy state of things is every year getting worse and worse, with the increase of population in our large towns.

Any impartial body of practical and scientific men, qualified to give an opinion on the subject, could not have arrived at a different conclusion than that of an exclusive dead-meat trade to meet the growing exigencies of the country. And this applies with equal force to the respective interests of the farmer and butcher as to any other class of the community; for although the former (farmers and butchers) are by public consent permitted to boast of the general good health of their profession, yet, when closely examined, the degree of health which either enjoys is often only skin-deep, more especially the general health of butchers as a class, that portly degree of rotundity of body, or of corpulency, so common amongst them, being rather indicative of the reverse of good health. And, besides the important practical fact that they are both well-fed—a consideration which has always the highest influence upon health—they have, in their respective occupations, an abundance of open-air exercise daily. And their labour is not only performed in the open-air, for the most part, but it is also of a character repulsive to the noxious gases which not unfrequently exist in the slaughter-house and shop. It is only when such facts are taken into consideration, and fairly estimated, that reliable conclusions can be deduced relative to the health of either farmer or butcher in comparison with that of others who are very differently situated. In the heat of summer, for example, what anxiety does the latter (the butcher) often manifest to get an empty shop on a Saturday night, so as to avoid the consequences of twenty-four hours chemistry in the rapid return of complex substances to their more simple and elementary forms—in plain English, to avoid stinking meat! But when we turn to the examination of the other side of the question, *i. e.*, the sanitary position of those into whose hands the carcase and offal of the town-slaughtered animal fall, we come upon a state of things no longer tolerable in large cities like the metropolis; for, instead of twenty-four hours, much of this meat and offal remains on hand for nearly a week, undergoing all sorts of processes imaginable, every one of which is injurious to health as if the grand object which the present cattle-market authorities had in view was to concentrate all sorts of mischief, so to speak, for the purpose of brewing pestilence in its most malignant and contagious form. It has been said by some men of high authority in such matters, that cholera is produced by the effluvia arising from the decomposition of the offal of the immense number of animals sacrificed by the followers of Mahomet, who congregate together in countless hordes at their annual festivals in Arabia. And as the concentration of all sorts of putrid animal filth at the Moslem festivals produces cholera, so the concentration of all sorts of putrid animal filth in our large towns is producing an increase of contagious diseases, mortality, degeneracy of race, and so forth! Is it therefore surprising that the more intelligent portion of the public should come to the practical determination to put a stop to this concentration of putrefying animal matter in our large towns? In other words, is it surprising that public opinion should begin to signify its determination to put a stop to cattle markets in all our large towns by the substitution of dead-meat markets, with the least possible delay? Indeed, the contrary of this would be the surprise. The surprise, for example, is, that there is in the kingdom a farmer so short-sighted as to send his fat ox and sheep to the Metropolitan Cattle Market, or the carcase of his ox and sheep to the Dead-meat Market of the metropolis, when by a little skill, patience, and perseverance he could slaughter and sell at home to much better advantage; and that there is a butcher in the British capital so ignorant of the philosophy of his trade as to attend either the live stock or dead-meat market for his weekly supplies, when he could easily get a much finer quality of meat daily directly from the producers, as not a few intelligent members of the trade are now doing by means of country agents and partners. And we may add, the commercial data thus applied to the capital are equally applicable to all our other large towns in which cattle markets and dead-meat markets are now held. Trade is governed by certain laws of economy, and to those laws the commerce of animal food is no exception, but the contrary, it being more sensibly under control relative to supply and demand than perhaps any other branch of trade, owing to the high pecuniary value of meat and its perishable nature. Those laws are at present, as they have hitherto been, in active operation, effecting certain progressive changes in the commerce of animal food, which butchers themselves cannot fail to perceive; and the force of such laws may not inaptly be compared to that of the mountain stream, which, when obstructed, only gathers increased strength, to sweep all such obstruction before it ultimately. The facts of the case leave no other conclusion practicable. And just so is the commercial stream in question. Certain farmers and butchers may throw numberless little odd things into the channel in the hopes of stemming the current, and doubtless for a short time they may succeed, but only eventually to ride the faster before it, or be swept wholly away in the deluge to the ocean.

As to the future this is all plain enough, but the meantime is sadly beset on every side with trying difficulties. There is not, perhaps, a single farmer or butcher in the kingdom, for example, who does not see an exclusive dead-meat trade looming in the future as large as life; but there are, nevertheless, hundreds who cannot see clearly how they are to get that length. True, there are none so blind as those who will not see; but although the old proverb may apply to a large number of farmers at the one end, and a still greater proportion of butchers at the other, there are, it must be confessed, not a few who are incapable, practically speaking, of taking a single step in advance of their present unfortunate position, as every such step they take is attended with a heavy pecuniary loss more than their circumstances will cover. Thus rinderpest has compelled, on the present visitation, many farmers and butchers to adopt the dead-meat trade; but the short experience which they have had satisfies them that its continuance would reduce both to bankruptcy before they served an apprenticeship sufficiently long to acquire professional tack to follow the new practice with success. No doubt the present dead-meat trade is conducted on very objectionable principles, more especially to farmers, who are called upon to forward to Newgate Market, we shall suppose, meat of the "primest quality," where it is tossed about and contaminated in a manner that greatly reduces its intrinsic value, while it renders a compulsory sale necessary, owing to its perishable character, and not only perishable from its complex chemical character, but rendered a thousand times more so from its being inoculated with the putrid matter that everywhere prevails in the atmosphere of the capital under the present system, putrid matter being more especially always sensibly rank and strong in the immediate precincts of the dead-meat market. On the other hand, a direct trade with the country, such as is now beginning to be adopted, requires the investment of considerably more capital by butchers than they now have invested under the existing system. This is true of the more respectable class of small butchers, who by a watchful attention and perseverance are always allowed less or more credit at their bankers. But to another class, a degree lower in the scale of respectability, who buy and sell the inferior descriptions of meat, and who act as a sort of scavengers to the large butchers, not unfrequently getting their supplies directly from the large shops, the proposition of country purchases daily becomes wholly impracticable. Such, therefore, being the position of a large number of farmers and butchers, it is not at all surprising that any of them should manifest strong desires for a continuation of things as they are, and even feel themselves in a sea of trouble just now, when called upon manfully to face the future in the go-a-head spirit of the age.

The indirect objections thus raised by butchers to an exclusive dead-meat trade are not only untenable, but of a character to which public opinion and the progress of science will not even condescend to reply. In plain English, practically speaking all such objections are included in the plea of uncivilised nations, who prefer their own old ways to all new propositions involving progress in science, just so long as prejudice and the force of circumstances bind them closely hand and foot to the former, but not a single minute longer! And this is exactly a parallel case to that of the people in question, who are at present obliged to advocate the continuation of barbarous practices in their trade, for the unfortunate reason that they are not yet in a position to occupy more civilised ground! But the moment they attain to the more elevated status of their brethren in advance, none will blow the trumpet of progress louder than they! Such being the facts of the case, *i. e.*, the difficulties with which so many butchers feel themselves at present beset on every side, we can well afford to extend a word of sympathy, while we commend to them the old rule, "They are far behind who dare not follow," for their future guidance.

Railway companies and steam-boat companies are not responding to the requirements of farmers, butchers, and the country generally, on the present occasion, as they ought to do, the requirements of the latter imperatively demanding the adoption of improved methods of conveying dead-meat, which the former are not supplying. Their conduct in this respect is greatly retarding the progress of improvement in the dead-meat trade, inasmuch as they are not giving farmers and butchers those facilities for doing business directly with each other to which they are professionally entitled; while, on the other hand, they are doing much to uphold the present live-stock and dead-meat trade, with all their barbarous, sickening, and disease-breeding consequences. The railway and steam-boat companies cannot fairly take up the plea of savage and semi-barbarous times, for they are themselves the offspring of modern improvement, and therefore they are the more to blame for upholding barbarous practices and for virtually refusing to comply with the solicitous demands of farmers, butchers, and the public, under the pressure of existing circumstances. If we trace the practice now followed by old school farmers and butchers backwards retrospectively to the pastoral times of our skin-clad ancestors in the reign of Boadicia, we shall find a closer family-likeness between the two extremes—the practice of farmers and butchers in the reign of Queen Victoria and the practice of farmers and butchers in the reign of Queen Boadicia—than the upholders of such barbarous practices may perhaps imagine. But railway and steam-boat companies have no such ancestral plea in support of their present out-of-date and barbarous method of handling, conveying, and delivering dead-meat; for modern improvement is the basis upon which their superstructures are built. Hence the practical conclusion. The Corporation of London and the civic authorities of other large towns, who own or have the control of the cattle markets and dead-meat markets held therein, are even doing less than railway and steam-boat companies to facilitate the reduction to practice of the proposition of supplying towns with animal food on sound commercial principles. Were the Corporation of London to invest half-a-million sterling in starting the direct method of butchers doing business directly with farmers, instead of sinking this large sum in the big-tomfoolery of a huge central dead-meat market for the wants of the capital in all time coming—the investment would not only yield profitable interest, but also at the same time secure for the inhabitants of the metropolis a regular daily supply of all the primest meat in the kingdom and on the continent of Europe; whereas the investment as proposed will prove a losing speculation as to interest, while it will do all the craft portion of the Corporation can to continue the present practice of a dead-meat market for all the refuse meat of the world?

LINCOLN SHEEP.

This was the subject of the monthly address delivered at the King's Head Hotel, Cirencester, under the auspices of the Farmers' Club, the lecturer being Mr. J. A. Clarke, of Long Sutton, who has been giving a course of lectures in connection with the Royal Agricultural College. Mr. Lawrence presided.

Mr. CLARKE, in the course of his lecture, said: Mr. Read, of Elkstone, in his interesting history of the Cotswold sheep, adduces evidence that woollen cloth was manufactured at Gloucester by the Romans, and quotes a passage from the historian Tacitus (who lived in the first century of the Christian era), about the neatness and good order of the streets in Cirencester, so that "nothing was to be thrown out before the shops, except a fuller hung out his cloth to dry." Cloth, of course, implies wool, and from wool we naturally come to sheep; therefore, there were sheep about Cirencester in those early times; and nobody in his senses can suppose they were anything but Cotswolds, fed in the "cotes" which gave name to the "wolds." No doubt they were noble and colossal as well as hardy animals, wearing the proud fore-locks of wool as they do now, and, for anything I know, yielding a fleece of 14lbs. to 20lbs.; breeding nothing else but twins to each ewe, and weighing at a year old some 30lbs. or 40lbs. the quarter! At any rate, if we choose so to imagine those muttons of Roman and Saxon breeds, nobody can bring up evidence to contradict us. Now, the Lincoln breed of sheep, of which I am to speak, has no such antiquity on its side; or, if it has, documents to that effect are wanting. It has never figured on the pages of history. Cotswold breeders may discuss whether their favourite flocks originated from Roman importation (for Mr. Read considers that our ancestors, the ancient Britons, though wonderfully rural in their habits, and good sportsmen, were by no means pastoral), or whether the Cotswolds were introduced into Britain by Eleanora of Castile, Queen of Henry II.; and they may point to the commencement of the export trade in Cotswolds, when in the 15th century, King Edward IV. sent a number of Cotswold rams as a present to Henry of Castile, while another royal lot was shipped to John of Arragon to improve the long-wools of Spain. But our Lincoln sheep have no such classical relations to glorify them. All I can tell you of their origin is, that in the old times they were very ugly and very big: as with sheep so with people, "there were giants on the earth in those days." And having to paddle about in wet marshes, under an atmosphere of rain and fog, these knowing animals took care to wrap themselves well up in their thick great coats. You are aware that in the last century a third of Lincolnshire was a perfectly flat surface of peaty fen and salt marsh, several feet below the level of the ocean at high spring tides; the inhabitants were generally web-footed, at least, the high-land dwellers used so to say of them: and the sheep had to make common cause with the Lincolnshire geese, and they had to fraternise with the Lincolnshire wild-fowl and the frogs, the croakers that Shakespeare calls "Lincolnshire bog-pipes." The climate has been completely altered since then by the embankment and drainage of the fens and marshes. You will find the most numerous flocks now upon the chalk "Wolds" and the oolite limestone "Heath" and "Cliff"—hills very much like the Cotswold range; but the breed is not a native of those dry and lofty uplands; in fact, the aboriginal natives of the Lincoln hills were rabbits, and the sheep folds displaced the warrens within the memory of people still living. The home of the heavy Lincoln sheep was on the lower undulating grounds, in the wide valleys, and more especially on the great plain of alluvial marshland in the county. Our ancient Fen sheep are described as "the longest-legged and largest carcassed sheep of all others; and although their legs and bellies were for the most part void of wool, yet they carried more wool than any sheep whatsoever." The old Lincolns, such as my grandfather knew, were ungainly animals, with carcases long and thin, razor backs, legs thick and rough, bones large, pelts thick; and though attaining a great weight (mainly "live weight" I should fancy), were very deliberate in laying on flesh—in fact, they were "regular brutes;" as if they had been bred by some Anti-Bakewell (if you can fancy such a character) with a perverse love of clumsiness and slow feeding, and selected generation after generation, not with an eye for early mutton, but with a view to superphosphate and sheepskin, developing the skeleton, and the hide! Their chief merit was their fleece, weighing 8lbs. to 16lbs., with a staple 10 to 18 inches in length. This long wool made the breed profitable to the lowland graziers, although covering such an unthrifty coarse-grained carcase of mutton. Now, however, Mr. Clarke observed, the Lincolns were vastly improved, not only with regard to size, but also as to wool; and he went on to say—A farmer at Leverington, near Wisbeach, grazed 219 Lincoln hoggets and 40 Lincoln shearlings, and the 259 fleeces weighed 117 tods, or an average of 12¾lbs. per fleece. Mr. Plowright, near Spalding, whose fat sheep I have already referred to as attaining such great weights of mutton, had in that same year the following "tod bill"—of hog and wether sheep, 690 "threes," 376 "twos," and 2 "ones," or 2,824 fleeces, being about 11lbs. per fleece, and many of them had been shorn in spring off sheep sold to the butcher. Probably in ordinary breeding flocks, where the proportion of hogg wool is about one-third of the whole, the fleeces average 8½lbs. to 9lbs. each. As to individual animals, the weight of wool is sometimes very great. In 1862, a two-shear Lincoln ram, clipped by Mr. Bond, of Yarborough, yielded a fleece of 23¾lbs.; and though heavy fleeces are too commonly coarse in quality, this was as remarkable for length and fineness of staple as for actual weight. My father's prize ram at the Lincoln Royal Meeting of 1854 had clipped 51¾lbs. of wool in three years, an average of 17¼lbs. per fleece. Lincoln wool is in great request, from its peculiar properties of length, strength, and lustre and brightness. It is not requisite that the fibre should be very long; indeed it need not exceed some six inches in length to come under the designation of "lustre wool"; but the longer and stronger it is, providing it be bright, and not coarse, the more valuable it is. At Battersea Show my father and myself exhibited a hogget fleece on the back of the sheep, the length of staple of which averaged about 17 inches: the age was about 16 months. I have a lock or staple of wool from a ewe hogget which is 24 inches long, and another from a ewe, but of more than two years' growth, which is no less than 40 inches in length. You are aware that wool is classed by manufacturers in two general divisions. There are clothing wools and combing wools. The short wools for the most part belong to the clothing, and the long wools to the combing quality. The short wools are pre-eminent for their felting property; that is, the tendency of the fibres to adhere together, owing to the minute serrations (sometimes over 2,000 in a lineal inch). When the wool has been carded, spun, and woven into woollen cloth, and is then put under the strokes of the fulling mill, this process of felting takes place. But long-wool, having fewer of the serrations upon its fibres, possesses the felting property in a minor degree, and it is called combing wool, because one of the first operations in manufacturing stuff and worsted goods from it, is to pass the wool through heated iron combs, thus rendering the fibres smooth, and more like fibres of silk or cotton, without, however, losing the natural lustre. One main use for which our lustre wool is sought after is in the manufacture of "alpacas," "coburgs," and various fabrics composed of mixtures of cotton and wool; the gloss given by the wool is so admired, as to have become a rage and fashion in materials for both gentlemen's paletots and ladies' dresses; and the weaver likes the wool because the microscopic saw-like teeth of the fibres take hold of the cotton in the process of weaving, and bind both together, making a sound and serviceable cloth. The product in thread or cloth from a fleece of wool is something astonishing. At Norwich, many years since, 39,200 yards, or 22¼ miles of thread, were spun from a single pound of wool; and sixty years ago a Miss Ives, at Spalding, spun 168,000 yards, or about 95½ miles of woollen thread from a pound of wool, off a Lincoln ewe. But this seems nothing to the multiplication a fleece now undergoes at Bradford. From the manufacturer who generally buys my "clip," I obtained this bit of information. A 20lb. Lincoln fleece, used as an admixture with cotton in the finest Alpaca fabrics, suffices for upwards of twelve "pieces," each piece of 42 yards in length; it might probably be extended to 16 pieces, or a total length of 672 yards, three feet in breadth. At 3s. a yard, the sum realised would be one hundred pounds; and I suppose (though I am not much of a dress-maker), that the crinolines of seventy or eighty ladies are covered with products from a single fleece of wool. When we think of the hundreds of thousands of sheep clipped every season, it is a mystery where all the dresses can go to! I believe that in the production of this valuable lustre wool Lincoln sheep have the pre-eminence both in weight and quality. Next in point of merit, come the fleeces of the Cotswolds and Leicesters, and the Kent and Romney-Marsh wool third. Amongst the eminent breeders of the celebrated long-wool Lincolnshire sheep at the present time the following gentlemen may be named: Mr. Kirkham, Biscathorpe; Mr. Greetham, Stainfield; Mr. Wright, Nocton; Mr. Marshall, Branston; Mr. Battersby, Scothern; Mr. Walesby, Ranby; Mr. Kemp, Thurby; and Mr. Gilliatt, Martin.

EARLY MATURITY IN CATTLE.

By peculiar modes of cultivation and management certain plants ripen their fruits earlier than they otherwise would do. Thus heat and light powerfully stimulate the ripening process. Hence tropical plants grow and ripen their fruits in hot-houses —plants that would die if exposed out-doors in our climate. Potatoes and mangolds, again, increase in size by means of manure; while in other cases the dwarfing process is had recourse to, for effecting like purposes. In every example much depends upon the nature of the plant operated upon. In a manner somewhat similar, cattle are forced forward to early maturity of growth. Thus all our improved breeds, or, as they are sometimes technically termed, "thorough-bred cattle," including Shorthorns, Devons, Herefords, are fit for the shambles at a much earlier period of life than what was the case prior to the improvement thus effected. So are many of our breeds of sheep. True, you can fatten a calf or lamb of any of our native breeds that have not been so improved; but if you go beyond veal and lamb, you then fail to get weight for a time, as the bones and lean flesh generally take to growing, without laying on extra fat. In the early maturation practice the bones, muscles, and nerves are subjected to a sort of dwarfing process, while the adipose and lymphatic systems are stimulated to excess, so as to secure weight for the butcher. We thus talk of early weight and early maturity as synonymous terms. Both expressions, however, are of an exceptional character, and, therefore, unless practically understood in the pounds-shillings-and-pence light, in which the agricultural public are proverbially disposed to look at and estimate every thing, they are liable to lead to error; for when the facts of the case are examined in a physiological light, as they ought to be, they prove the contrary of maturity of growth. Moreover, when examined from a sanitary or cattle-plague point of view, the pecuniary conclusions of the agricultural public are liable to be called in question as "penny wise and pound foolish," if not something more worthless.

It is high time that the practice of early maturity, under the forcing system of stock management, were thoroughly investigated, more especially from a sanitary point of view, in order to test its economy, in comparison with other methods of stock management more in harmony with the health of cattle and the highest value of their flesh as human food. True enough enormous weights are produced at an early age for the shambles by the former practice, but it is equally true that a very large proportion of this weight is wholly unfit for human food, and also that the remainder is annually becoming of less money value in the estimation of consumers, and even is beginning to be rejected by them as unwholesome, and therefore unfit for human food. On the other hand, rich aged beef and mutton, the produce of the latter practice, is annually increasing in money value, as consumers advance in sanitary science, while almost the whole carcase-weight of aged animals of good quality is readily purchased as available for food, much of the loose fat being preferred to lard in the cooking of many dishes. Then comes the question of greater liability to contagious diseases, to which animals under the former (the forcing) system are subject; which of itself is, we aver, more than sufficient to turn the cash-balance against it. No doubt the greater loss from pleuro-pneumonia and rinderpest, and the greater losses from the general delicately bad state of health under the forcing system, as compared with the "rude health" enjoyed under the natural system, is rather difficult to estimate. Still, although some individual farmers may be in a position to plead the exception, the general rule is manifestly against the former, and in favour of the latter. And this too is not the more important answer to the objection thus raised, for mortality amongst cattle is on the increase; so that the greater loss is annually increasing in magnitude, while the exceptions are consequently becoming fewer in number, and the losing rule more and more general.

Turning to milch cows, both for breeding and dairy purposes, the early maturation practice is perhaps attended with as heavy losses as in the above case of producing meat for the shambles. In point of fact, early maturity is against the pail, much fat being opposed to much milk; so that, as a complete system, one half, or a large proportion of the early-maturity practice is against the remainder, which manifestly reduces its pecuniary value. Breeding and dairy stock constitute no small proportion of our bovine herds; so that whatever a farmer loses under this branch of stock-management he has to deduct from his profits on fat stock sent to the butcher. And when we look at the frightful ravages from rinderpest in Cheshire, and the partiality of the diseases to cowhouses generally, the case of the balance-sheet of the whole kingdom at Lady-day will obviously have a tendency to lessen the value of the practice in the estimation of those who have hitherto been its warmest admirers. And this, too, is not all; for the above anomalous conditions of the practice relative to early maturity being against milk, is rendering it more and more difficult for town dairymen to get a supply of healthy useful milch cows at home, consequently they are driven in search of supplies to Holland and other places on the Continent, thereby greatly increasing the risk of introducing rinderpest and other contagious diseases into this country with the continuous importation of foreign milch cows, while it is at the same time sacrificing one of the most important productive and profitable branches of stock management in this country, by giving it to foreign farmers. In short, throughout the whole of this branch of stock management, penny-wise-and-pound-foolish cross purposes may not inaptly be said to be the rule, the disappointments from extra-fat heifers selected for breeding, and extra-fat cows for milk, greatly swelling the account of losses.

We have certainly no wish to blacken the face of the future deeper than what experience is likely to find it to be; but the past and present manifestly forbid a favourable prospective view being taken of the early-maturity system yet so fashionably in vogue in most of our provinces at the time we write. Its shortcomings are many; and, when impartially examined, their magnitude far exceeds what is generally credited, while its sounding title, and the force of habit amongst farmers and butchers, will have a tendency to keep it half-alive, as it were, for a long time to come. The system may, no doubt, gradually lose its popularity, as its pecuniary shortcomings are tangibly brought home to the pockets of the farmer, and thus eventually die out a lingering death; but so long as "greenhorns" can be sold by salesmen to butchers at a higher price than they are worth, and the difference charged to the account of consumers, the work of retrenchment and economy must be experienced as thickly beset with roundabout complications. Still, the wholesome and needful undertaking of rectification is going on, if slowly, yet at an accelerated speed. Dwarfed bones, nerves, and muscles have had their day, with doubtless an abundance of sunshine and pleasant, breezy weather; but the horizon is getting more and more overcast, while the fleeting shadows of stormy clouds are beginning to scud thickly and more thickly and ominously across the pastures, as if a change of weather was close at hand. There cannot be two opinions raised upon this; for healthy bone, nerve, and muscle grow together in the mutual bonds of an unflinching fellowship—which simply means, practically speaking, the greatest possible quantity of rich, lean meat that can be grown—the grand desideratum which consumers are every day becoming more and more determined to have; whereas dwarfed bone, nerve, and muscle mean, in plain English, shapeless lumps of greasy fat, with a minimum quantity of florid, red, insipid, soft, lean meat—a quality which has fairly upset, already, the public stomach. Before the fire, the cook says, it melts away into a sort of liquid which is neither gravy nor dirty water. Upon the gridiron, it blazes like a tar-barrel on fire, the half of it going up the chimney in smoke; boiled, a large proportion of the butcher's weight rises to the surface, in the form of a most unpalatable scum; while the half of the remainder that comes to the table at dinner-time is only fit for "cats' and dogs'-meat." Altogether, it gives a sorry account of the farmer's hay, cake, corn, and mangolds consumed, whose bone, nerve, and muscle-forming elements, we have omitted to mention, go directly to the dunghill in the outset. The system, if system it can be called, has, from this fact, been nicknamed the "muckland practice;" and this perhaps involves the only little bit of real, honest credit to which it is, throughout, entitled at the hands of a thinking public.

Let us not, however, be misunderstood relative to the growth of bones. According to the old proverb, "Corn grows upon straw," and in like manner lean meat grows upon bone. This is one of those plain matter-of-fact questions upon which a controversy cannot fairly be raised. But as there are extremes in the growth of straw unfavourable to the yield of corn, so there are extremes in the growth of bone unfavourable to the production of lean meat; and, anomalous as it may appear to the inexperienced reader, the dwarf-bone system is attended with this latter anomalous extreme, which greatly reduces the general value of the practice. The dwarf-bone rule has therefore an exception, and in practice this exception is, unfortunately, in many herds the rule, the number of large, coarse, bony, leggy animals, that never lay on fat well, being greater than the number of dwarf-boned ones, deficient of lean meat, but greatly over-loaded with a redundancy of fat. A vast number of these coarse-boned animals may be seen in the Metropolitan Cattle Market every week, the greater proportion of them being slaughtered at a period of life just when they are beginning to promise the farmer payment for their food. Some say the number is on the increase; and, probably, so it is, taking our thorough-bred Shorthorns and Herefords as a whole, owing to the wider field over which they are now spread, and the numerical increase of both herds; but we rather feel disposed to believe that the per-centage of coarse bones is less than at a former period. We aver that the error lies in not distinguishing between large bones and coarse bones—unshapely as to form and disproportionate as to size. The large-boned ox often exemplifies finer symmetry than the dwarfed small-boned one, whose faulty frame is frequently concealed under much fat; and were the former allowed to obtain to maturity of growth, under proper management, he would carry to the shambles a much greater proportion of useful lean meat to a given weight of bone than does the latter, the large-boned ox returning at the same time more money for his food. Not so the coarse-boned ox; for the sooner he is got rid of, at any price, the better for his owner. In the anomalous example of dairy stock formerly noticed, where the early-maturity fat milch cow proves a bad milker and breeder, there is also an exception, many thorough-bred milch cows being great milkers, and also very fruitful breeders; but when they turn out so, the milk although large in quantity is of an inferior quality, while they and their offspring are seldom very healthy, the percentage of mortality amongst this quality of stock generally running very high. So long as they maintain their health they are profitable town dairy cows, while their offspring can be sold as veal; hence the common conclusion in their favour. But the growing prevalence of contagious diseases is rendering them less profitable for dairy-farming than they were, while town's-people are beginning to put a higher value upon the rich milk of healthy milch cows. In short, the profit from such stock, whether forced onwards for the shambles, or kept for breeding and dairy purposes, is annually becoming more and more a problematical question. All things considered, therefore, it is not surprising that the early-maturity theory should begin to lose popularity, and even show signs of waning dimensions when examined in the light of the future.

Most extremes have an opposite, and much of the enormous value put upon the early-maturity system arises from its having an unprofitable opposite extreme, viz., the starving denaturalization practice previously pursued, under which maturity of growth was interrupted during the winter season, while the size of the animal was dwarfed. The two practices are antagonistic in many respects, more especially in those peculiar features that distinguish them from each other. Thus more cattle are now fattened during the winter months than during the summer time, while the forcing process is at its height about Christmas time; whereas, under the old practice starvation was the winter rule, and the fattening process the summer one. The golden mean between these two extreme practices was somehow or other lost sight of, as our ancestors migrated westwards from the plains of Shinar, the cradle of our race, and it may not inaptly be said that up to this date it has not been seen again. There is, consequently, some excuse for practical farmers falling into penny-wise comparisons in estimating the pecuniary values of those practices to which their experience has been exclusively confined. But granting this, it must likewise be admitted that all such narrow-minded estimates of stock-management do not apply to future practice, much less to the golden-mean of any past period in exceptionary climates where it has existed, if such climates are anywhere to be found. But we need not waste time in fruitlessly hunting the world over for what does not touch ourselves; for if our climate does not come up to the standard required by the details of the practice involved in the rule of this golden-mean or natural practice, the duty of Art is to make up as far as possible the shortcomings of Nature; for this natural practice, or practice with Natural Science, is manifestly the only sure foundation upon which farmers can hope to have a profitable system of stock management for the future.

Historians tell us that cattle have been the companions of man from Paradise to the Deluge, and from the Deluge down to the present time; but history is silent as to the size and symmetry of the Paradisian ox, sheep, and pig. It is all but manifest, however, that they have neither improved in size nor symmetry, but the contrary, and also that they were the adverse of hothouse plants, mature growth being attained by a slow, uniform process. But the length of the natural period for attaining to maturity of growth is nevertheless a question of uncertainty. On the other hand, there are many practical reasons for concluding that this natural period was considerably extended in length by the winter-starving process, to which cattle became subject in their migrations westward with our ancestors. It follows, therefore, that in the improvement of the breeds of cattle farmers are not to give up the early-maturation process, but only the abnormal process of dwarfing flesh and bone for the purpose of stimulating an excessive development of the adipose and lymphatic systems. For the future, the natural growth of organs, parts, and regions of the body of the ox, sheep, or pig must be the rule absolute; and so long as there is an imperfect foundation to build upon, the work is one requiring the highest degree of skill and perseverance in its prosecution. At present, heavy weights are attained at an early age, but a very large and undue proportion of that weight is not available for human food; while the quality of what is sold as edible is very inferior. More flesh and bone are wanted, and less offal; and to attain such, farmers must grow older and larger cattle, otherwise the practice won't pay; and this increase of size and age appears to accord with the sanitary laws of nature and the original history of stock, when they were pronounced "very good" by their Great Creator.

THE EXPERIENCE OF A CATTLE-FEEDER.

At the Edinburgh Chamber of Agricultnre, Mr. William McCombie, of Tillyfour, read the following paper: My father and my grandfather were dealers in cattle. My father carried on a very extensive business; he had dealings with several of the most eminent feeders in East Lothian; among these were the late Adam Bogue, Linplum, with John Rennie, of Phantassie, with Mr. Walker, Ferrygate, &c. I cannot tell you how much I hold in reverence the memory of the late Adam Bogue. I regard Mr. Bogue as having been one of the finest specimens of a kind-hearted gentleman I have ever met. It would be difficult for me to say how highly I honour the memory of other friends of my father and of myself in East Lothian. I may mention William Brodie, John Brodie, William Kerr, John Slate, Archibald Skirving, and Mr. Broadwood, farmers all eminent as feeders of stock. My father had his chief business connection with East Lothian, but he had also a connection with Mid-Lothian, the county of Fife, and a large trade with England. At one of the Michaelmas Trysts of Falkirk, he sold 1,500 cattle. He wished to give all the members of his family a good education. I was kept at school, and was afterwards two years at college; but to this day I regret my inattention when at school. My father was very unwilling that I should follow his business, knowing that it was a very precarious one; but what could he do with me? I would do nothing else, and he was obliged to yield. I worked on the farm for years, when not away at the fairs, with the servants, and had their diet. I cut two harvests, and during the season took charge of the cattle. My first speculation was a £12 park. I had a partner, an excellent man, who had been a servant to my father for twenty years. It was a good year, and we divided £15 of profit. This gave me encouragement. I yearly increased my speculations, and I gradually got into my father's business at the Falkirk markets and Hallow Fair. My father was very indulgent, and sent me away to a fair when a very young man, and gave me authority to buy, and money to pay for half-a-dozen of beasts. I exceeded my commission, and bought three little lots of beasts—about fifteen. The owners trusted me the money I was short. I drove them home myself—about sixteen miles. I was very proud of my drove. My father examined them next morning, and remarked, "They have not the countenance of beasts." I went away very much chagrined. This was about my first appearance as a buyer of cattle, and some of the beasts I remember to this day. I believe there is no better way to teach a young man than to put him to market without assistance. If a man cannot back himself he is unfit for the trade of a butcher, a jobber, or grazier. My father retired with a good name, and I retained his old customers. It was only on one occasion that Adam Bogue bought a beast from any dealer except from my father or me. He declared he was no gainer by the transaction. He purchased 120 cattle yearly. The late Mr. Broadwood, whose memory I also revere, always bought about 80 beasts at the Michaelmas. I put up the number and the sire he wanted, and he bought them from me and my father for many years. He bought them middlesized three and four years old, and never would go beyond £11 per head. The highest figure at that time for feeding cattle at Falkirk was about £13. On Tuesday morning he came to my cattle and inspected them first, and asked their price, and to such a customer as Mr. Broadwood I asked close. To some parties it is necessary to give halter. He went away, and examined other dealers' cattle, but always came back in about an hour, and I think I never missed him. He was a good judge, and did not require any assistance; he came alone. I had several dealings with Mr. Broadwood's son, but only occasionally, and he did not stick so close to me as his father. I also retained the friendship of Robert Walker, the Messrs. Brodie, Archibald Skirving, and Mr. Broadwood. I secured for myself the friendship of Mr. Buist, of the late William Kerr, the late John Slate, and John Dudgeon, Almondhill. My father and I always had about the best cattle at Falkirk. There was a great trade with Cumberland at the Michaelmas Tryst for horned Aberdeen cattle. The cattle were sent from Cumberland to Barnet in spring, and sold off the marshes fat in July and August. My best sixty generally commanded the highest price. The late Mr. William Thom was my great opponent in the horned cattle trade, and beat me sometimes all I could do. When we saw it for our interest we went in company, and attended all the great fairs in the north; and when we joined we secured a good proportion of the best cattle. Our grazing cattle were always sold separately. Mr. Thom will be remembered by not a few in this room. He was a giant as to strength; an honester man never lived; perhaps a little strong in his manner, but of great ability and perseverance. The company were not very regular book-keepers; our accounts got confused. At the wind-up at Hallow Fair, as we had the accounts of the Falkirks likewise to settle, we worked at them for days, and the longer we worked the more confused they became. To this day I do not know who had the balance in his favour. For the future we resolved to act separately. It was a bad Hallow Fair for large cattle. I have doubled stirks at Hallow Fair. I have bought stirks from £2 to £4, and, to use an Aberdeen expression, I have turned them heels over their heads. But I never could take a shilling of profit out of large cattle. Mr. Thom and I had unfortunately left over sixty very large cattle unsold from the Michaelmas. A respected member of this Chamber will recollect them. Many of them had cost £13 and £14 in Aberdeenshire. Mr. Thom had the selling of them. He had just one offerer in the shape of three gentlemen—one from East Lothian, one from Fife, and one from Perth, who likewise joined. They were sold the next day at £12 5s. a head. After the bargain was struck the gentlemen requested Mr. Thom to divide them. I recollect his answer, viz.: "Well, gentlemen, you have been good and great friends for two days: it would be a great pity for me to quarrel you now." He gave a satirical look in the face to his customers. Mr. Thom, who was thoroughly up, turned upon his heel and went away. I divided the beasts for the gentlemen, and to divide a lot of beasts equally is not such an easy matter as some might suppose. I sent for many years sixty horned cattle in spring to Mr. Buist, Tynninghame. They were grazed in Tynninghame Park, and he also required other forty or sixty during the season for house-feeding. I only gave up the commission business when I could carry it out no longer to my own satisfaction and to the advantage of my employers. There was not after I went to the Falkirk markets a white beast to be seen for years; but by-and-bye Irish-bred cattle appeared, and then the Shorthorns. The business of dealing in north-country cattle came to be worthless. I bade Falkirk adieu, and turned my attention entirely to the rearing and fattening of cattle at home. I gave up the fascinating business of a lean cattle jobber; I saw it was done for, and I have never regretted my resolution. The lean cattle trade was difficult to manage; it was most dangerous. Many a day when attending Hallow Fair, I have got up by four or five o'clock in the morning, breakfasted, and not tasted food till six o'clock at night. The weather was so bad at one Hallow Fair, that man and beast were up to the knees in mud. I had my beasts standing near one of the gates. Mr. Archibald Skirving never got further than my cattle. He bought forty, sent them away, and returned home. He bade me good morning, saying, "I would not like to be in your place to-day." I have stood many a bad Hallow Fair, but I think the worst was about twenty years ago. I never was so much in want of assistance from my friends. The price of cattle had fallen very much after the Michaelmas Tryst. Turnips were bad in East-Lothian. I had been on a visit to Mr. Buist, and met Mr. Kerr, Mr. Slate, Mr. Walker, &c. Both buyers and sellers anticipated a bad Hallow Fair, and it turned out the worst I ever saw. Hallow Fair is generally either a very good or very bad market. Well, Tuesday came, and with it a storm of wind and rain; it was the worst market-day I ever stood. You could hardly know the colour of the cattle. They were standing to their bellies in a stubble-field. This Chamber should represent to the magistrates the injustice to the dealers of allowing Hallow Fair to be held in any field but a lea one. My friends got to the market: there were Mr. Buist, Mr. Walker, Ferrygate, Mr. Kerr, Mr. Slate, and one or two more. They gave my cattle what examination it was possible to give cattle in such a stormy day; out of about two hundred cattle they wanted about one hundred and seventy. Mr. Walker said to me: "I think you might give us a glass of brandy." We retired to a tent. We did not move for an hour and a-half, as one wanted forty, another thirty, another twenty, &c. It took a good deal of time to talk over the different lots; at last we rose. I had, while seated, drawn them as to the price as far as they would come. The weather was dreadful. We were to part. I was very unwilling, and they were not very anxious to face the storm. I was in the middle of my customers, and did what I could, no doubt, to get an advance on their offers. When all was over, I gave the accustomed clap of the dealer on the hand (which must be known to most of the gentlemen here) all round, and I did not see them again till night, except Mr. William Kerr, who, with a struggle got the length of my remaining thirty beasts, and bought ten. I think I hear the triumphant howls of the men to this day when they started the nine score of cattle for their destinations, one lot after another, through the lots of the astonished dealers, whose cattle at that hour, I believe, were never priced. There were few sold on the first day. I could not sell my twenty remaining cattle, and never could even get a bid for them. Of all the good turns my friends did for me this was the best. I came out with a small profit. The losses sustained by other parties at the market were heavy. A great many cattle were sent farther south, and returned back to the north. One respectable dealer told me that no one had ever asked the price of his cattle, and coolly added: "I have taken turnips from ——— and sent the cattle home." I never lost a shilling in East-Lothian, or by a bad debt as a lean-cattle dealer. First, as to the method of selecting the cattle best adapted for paying a rent: To be a good judge of store cattle is exceedingly difficult. We have many judges of fat cattle among our farmers and butchers; we have a few good judges of breeding stock; our really good judges of store cattle are exceedingly few. A judge of store cattle ought to be able to say at a glance how much the animal will improve, how much additional value you can put upon him on good, bad, or indifferent land, and on turnips in three, six, or twelve months. Except a grazier is able to do this, he is working in the dark, and can never obtain eminence in his profession. Since I had the half of the £12-park I have bought and grazed store cattle for forty-five years. No one has been able to put upon paper a clear definition, that can be understood by the reader, of the characteristics of a good store beast. It is only practice and a natural gift that can enable any one to master the subject. There are a few rules, however, that the buyer of store cattle should be acquainted with. You ought to know how they have been kept for the previous six months. If you do not know this, your keep may be entirely thrown away. I make it an almost universal rule (and I have never departed from the rule except with a loss), that I will graze no cattle except those that have been kept in the open straw-yard, and have been fed exclusively on turnips and straw. If you can get them off yellow turnips it will be decidedly to your advantage. I have seen this proved by dividing twenty beasts, one-half kept on yellow turnips, and one-half upon swedes. The beasts had full turnips. The cattle on the swedes shot far a head in the strawyard of those upon the yellows. But when taken up from grass the cattle fed upon the yellows were equal to those fed on the swedes. They were grazed together. The difference of improvement in different lots of cattle must have often struck you. If you put upon grass cattle that have been fed through the winter upon cake, corn, brewers' wash, grains, or potatoes, and kept in hot byres or close strawyards, and look to them to pay a rent, they will soon make a poor man of you. This mode of feeding is unnatural. Before the animals begin to improve, three months will have passed. If you buy half-fat cattle kept close in byres or strawyards, and put them to grass in April or the first two weeks of May, and cold stormy weather set in, with no covering to defend them, they will astonish you some morning. They will fall off so much that you can scarcely believe they are the beasts you bought. Thus you not only lose all your grass, but the beast will be lighter at the end of three months than when you put them into your field. I must not be misunderstood. I do not mean to say that a few weeks of a little cake or corn will ruin a beast for grazing. But you may depend upon it that the less artificial food they get during winter the better. When kept upon the food I have specified for months and months they are perfectly unfit for grazing. I regard cake as the safest substitute for turnips and corn; potatoes, brewers' wash, and grain are the worst. But my ambition is to graze a bullock that has never been forced, and has never tasted cake, corn, or potatoes. The store cattle I winter for grazing are all kept in open strawyards, with a sufficient covering for bad weather, with as dry a bed as the quantity of straw will permit. This is indispensable for the thriving of the cattle. They receive as many turnips as they can eat. You must always keep beasts progressing; if you do not, they will never pay you. My store cattle never see cake, corn, or potatoes. I would rather throw potatoes to the dunghill than give them to a store bullock. I would give them to my fatting bullocks. If I can get the number of bullocks for grazing that I want, I will not lose one mouthful of grass upon them. They will not go on, however, without proper care and superintendence; it requires a practised eye. If a grazier has a number of fields and many cattle, to carry out the treatment of his cattle properly, shifting and fresh grass once in ten or fourteen days should, if possible, be adopted. This has always been my practice. In one day I have observed a marked difference in the improvement of animals after the shift. The grazier must always consider the quality of his grass land, and buy cattle adapted for it. It would be very bad policy to buy fine cattle for poor or middling lands. You must always keep in view how the cattle have been kept. If they have been improperly kept for your purpose, their size, whether large or small, will not save you from loss. If the cattle are kept on cake, corn, potatoes, or brewers' wash, or grain during the previous winter, it will be ruin to the graziers. You must not think that I wish you to buy lean half-starved beasts. What I wish you to understand is, that you must keep the cattle always full of flesh, and as a breeder (the subject of breeding, I am aware, is not upon the card for discussion, I shall encroach upon it as little as possible) you must be careful not to lose the calf flesh. If you do so by starving the animal at any time of his growth, you lose the cream—the covering of flesh so much prized by all our best retail butchers. Where do all the scraggy bad-fleshed beasts come from that we see daily in our fat markets, and what is the cause of their scragginess? It is because they have been stinted and starved at some period of their growth. If you once lose the calf flesh, you will never regain it. You may get a great deal of tallow internally by high feeding, but you will never again make the animal one that will be prized by the great retail butcher. Our Aberdeen working bullocks carry little good meat. Draught as well starvation takes off the flesh. They are generally only fit for ship beef. I will now make a few observations as to the breeds of cattle best adapted for paying a rent. If cattle do not pay a rent they are worthless to us. I have grazed the pure Aberdeen and Angus, the Aberdeen and-north country crosses, the Highland, the Galloways, and what is termed in Angus the south-country cattle, the Dutch, and the Jutland. Except the two latter, all the others have got a fair trial. I am aware that the merits of the pure Aberdeen and Angus form a difficult and delicate subject for me to deal with. I know that my friends the breeders of Shorthorns will mark my statements But I am here to-day for the purpose of laying before you my experience, and I trust that I have divested myself of prejudice as much as possible. If you can get store cattle of Aberdeen and Angus breed out of our best herds, I believe *no other* breed of cattle will pay the grazier more money in the north for the same value of keep. But there is a race of starved vermin, which is known by some in the north by the name of "Highland hummlies," which I consider the worst of all breeds. No keep will move them much. At the top of these I must place those with the brown ridge along the back. You can make them older, but you will have more ability than I ever had if you can make them much bigger. Keep is entirely thrown away upon such animals. As regards gold Aberdeen or north-country crosses, they are rent-payers. He would be very prejudiced indeed who would not acknowledge their merits. I graze more cross-bred cattle than pure-bred polled. The Highlanders on our land are unfitted for paying a rent; they are of such a restless disposition that they are unsuitable for stall-feeding, however well they are adapted for grazing-purposes in certain localities, and under certain conditions. But, I repeat, for stall-feeding they are unsuitable; confinement is unnatural to their disposition. They will graze fairly; but I beg of you not to attempt to tie them to the stall. The last Highlanders I attempted to feed were bought at a cheap time. In the month of June they were the most beautiful animals. They grazed fairly. I tied them up. They broke loose now and again, and ran three miles off to the glen where they were grazed. There was one of them that the keeper never dared go near to. The stall had to be cleaned out with a long crook. They consumed few turnips; and did not pay a sixpence for what turnips they did consume. But no other description of cattle, however, is so beautiful for noblemen and gentlemen's parks. As to the Galloway cattle, they have also had a fair trial with me. I was in the habit of buying for years from one of the most eminent judges of store Galloways in Britain—Captain Kennedy, of Bennane—a lot of Galloway cattle. He selected them generally, when stirks, from all the eminent breeders of Galloway cattle; and bought generally all the prize stirks at the different shows. Captain Kennedy would not see a bad Galloway on his manors. The Galloway has many and great qualifications. If we except the small Highlander, on poor land they are unrivalled. Captain Kennedy's cattle always paid me; they were grazed on a 100-acre park of poor land. The land was so poor that our Aberdeens could not subsist upon it. I had to break it up for cropping. If I had not been obliged to do this, I should never like to have missed Captain Kennedy's Galloways. Although the Galloways are such good cattle to graze—and this goes to prove the truth of my remarks as to the forcing system, the Galloways at Glenapp being wintered out—they are not so easily finished as our Aberdeen and Angus or cross-bred cattle. They have too much thickness of skin and hair, too much timber in their legs; they are too thick in their tails for being very fast feeders. It is difficult to make them ripe. You can bring them to be three-quarters fat, but it is difficult to give them the last dip. If, however, you do so, there is no other breed worth more by the pound-weight than a first-class Galloway. As to what we term the south-country cattle, I have also given them a trial. My experience is that they are great beasts to grow—that they consume an immense deal of food; but that they are difficult to finish, and, when finished, they are very indifferent sellers in the London market. They generally carry a deal of offal along with them; but those who have patience, and keep them for many months, they may pay for keep. I have had a few German and Jutland cattle through my hands, but not sufficient numbers to enable me to say anything about them worthy of your notice. After trying all the breeds of cattle I have specified, I have come to the conclusion that the Aberdeen and Angus polled and the Aberdeen and north-country crosses are the only cattle adapted, under ordinary circumstances in the north of Scotland, for paying a rent. Our cross-bred cattle, and especially the south-country cattle, are greater consumers of food than the pure Aberdeens. This part of the subject has never got the consideration it deserves. When the cross and south-country cattle are two or three years old, and when the day lengthens out, they consume a fearful quantity of food. The age of cattle ought also to be taken into consideration. No doubt a young two-year-old will grow more than a three-year-old, and for a long keep may pay as well; but I have been always partial to aged cattle; and if you want a quick clearance, age is of great consequence. The great retail London butchers are not partial to "the two teeths," as they call them; and I have seen them on the great Christmas day examining the mouths of cattle before they would buy them. They die badly as to internal fat, and are generally light on the forerib. I have always given a preference to aged cattle, as they get sooner fat, are deep on the forerib, and require less cake to finish them. Aged cattle, however, are now difficult to be had, and every year they will be scarcer, with the present demand for beef. A perfect breeding or feeding animal should have a fine expression of countenance—I could point it out, but it is difficult to put upon paper. It should be mild, serene, and expressive; should be fine in the bone, with clean muzzle; a tail like a rat's, and not ewe-necked; short on the legs. He should have a small well-put-on head, prominent eye, a skin not too thick nor too thin; he should be covered with fine silky hair—to the touch like a lady's glove; he should have a good belly, to hold his meat; he should be straight-backed, well ribbed-up, and well ribbed-home; his hook bones should not be too wide apart. A wide-hooked animal, especially a cow after calving, always has a vacancy between the hook and the tail, and a want of the most valuable part of the carcase. I detest to see hooks too wide apart; they should correspond with the other proportions of the body. A level line should run from the hook to the tail. He should be well set in at the tail, free of patchiness there and all over, with deep thighs, that the butcher may get his second round and prominent brisket deep in the forerib. His outline ought to be such that if a tape is stretched from the fore-shoulder to the thigh, and from the shoulder along the back to the extremity there, the line should lie close, with no vacancies; and without a void, the line should fill from the hook to the tail. From the shoulder-blade to the head should be well filled up—as we say, good in the neck vein. I am aware that the preceding remarks as to the quality and proportions a beast should possess must be very unsatisfactory to you, as they are to myself; scarcely any one animal has possessed them all, and to look for the half of them in a good commercial beast would be vain. I have consulted no writer upon the subject; they are set down, and not in good order, just as they struck me at the time. Thick legs, thick tails, and deep necks, with thick skin and bristly hair, always point to sluggish feeders. In cold weather in the month of May, the old silky coat of the straw-yard bullock is of great advantage. If we could get the qualities and proportions I have specified in animals, it would not be difficult to make them fat. It would be difficult only to make them lean, when once in condition. A high standing, want of ribbing-up and ribbing home, with the tucked-up flank, always denote a worthless feeder. You must all have observed how difficult it is to bring such cattle into a state for killing. It will take a deal of cake and corn to make them ripe. A great many can never be made more than fresh: it is only a waste of time and money to keep them on. I have adverted to the way cattle should be treated in winter as stores. The earlier you can put cattle upon grass so much the better. Cattle never forget an early bite of new grass, and it is wonderful what improvement a good straw-yard bullock will make in four or five weeks at the first of the season. If kept on straw and turnips alone in winter, he may add a third or at least a fourth to his live weight. But much depends on the weather. I have never known cattle make much improvement in April, or even up to the 12th of May; because the weather is so unsteady, and the cold nights when they are exposed in the fields take off the condition the grass puts on. The grazier will find it of great advantage to house his cattle at night during this season. In Aberdeenshire the 10th of May is about the earliest period cattle should be put to grass. Where there is new grass first year, it is a most difficult matter to get the full advantage of it. There is no other grass to be compared with it for putting on beef in Aberdeenshire. You must be careful at the first of the season, if much rain falls, not to allow the cattle to remain on the young grass. They must be shifted immediately, and no one can get the proper advantage of such grass who is deprived of the power of shifting the cattle into a park of older grass till the land again becomes firm for the cattle. I have seen a small field of new grass in the month of May or the beginning of June utterly ruined in one night, when heavily stocked with cattle. When wet and cold the cattle wander about the whole night, and in the morning the fields are little better than ploughed land. In fact the fields so injured will never recover until broken up again. In regard to my own farms, I cut scarcely any hay. I pasture almost all my new grass, and the moment the cattle's feet begin to injure the grass, they are removed. If cattle are changed to an old grass field, so much the better; but they will be safe on second or third years' grass, provided the land is naturally dry. By the 1st July, the new grass land gets consolidated, and you are safe. New grass fields are bad to manage in another respect. The grass comes very rapidly about the 10th June, and if you are not a very good judge of what you are about, it will get away in a few days, become too rank, and will lose its feeding qualities during the remainder of the season. By the middle of July it will be nothing but withered herbage. Young grass ought to be well eaten down, and then relieved for two or three weeks, then return. The cattle and the grass will be as sweet as before. It requires practice to know the number of cattle, and the proper time to put on these cattle to secure the full benefits of new grass. Three days' miscalculation may cause a heavy loss. I have been bit so often, and found the difficulty so great, that I fear to extend my observations on this part of the subject, when I am addressing gentlemen, many of whom make their young grass into hay, or sell the grass to the cow-feeders. The pasturing of new grass in which the farmers of Aberdeenshire and the north of Scotland have a deep interest may not apply to many other parts of Scotland. I come now to the way cattle should be treated after being taken from their pastures, and put on turnips. The earlier you put them up, the sooner they will be ready for the butcher. I shall state the method I adopt. I sow annually from twelve to sixteen acres of tares, and about the 1st of July save a proportion of the new grass full of red clover, and from the 1st to the 20th August both tares and clover are fit for the cattle. I have for many years fed from three hundred to four hundred cattle, and if I was not to take them up in time, I could pay no rent at all. A week's house-feeding in August, September, and October, is as good as three weeks' in the dead of winter. I begin to put the cattle into the yards from the first to the middle of August, drafting the largest cattle intended for the great Christmas market. This drafting gives a great relief to the grass parks, and leaves abundance to the cattle in the fields. During the months of August, September, and October, cattle do best in the yards, the byres being too hot; but when the cold weather sets in there is no way where many cattle are kept that they will do as well as at the stall. You cannot get loose boxes for eighty to one hundred cattle on one farm. I generally buy my store cattle in Morayshire. They have all been kept in the straw-yard, never being tied. When the cattle are tied up on my farms, a rope is thrown over the neck of the bullock, the other end of the rope is taken round the stake, two men are put upon it, and overhaul the bullock to his place. When tightened up to the stall, the chain is attached to the neck, and the beast is fast. We can tie up fifty beasts in five hours in this way. When tied, you must keep a man with a switch to keep up the bullocks. If you did not do this, you would soon have every one of them loose again. They require to be carefully watched the first night, and in three days they get quite accustomed to their confinement, except in the case of some very wild beast. I never lost a bullock by this method of tying up. This system is like other systems: it requires trained hands to practise it. I never give feeding cattle unripe green tares; they must be three parts ripe before being cut. I mix the tares when they are sown with a third of white peas and a third of oats. When three parts ripe, especially the white peas, they are very good feeding. The fresh clover, given along with tares, peas, &c., forms a capital mixture. I sow a proportion of yellow Aberdeen turnips early, to succeed the tares and clover. I find the soft varieties are more apt to run to seed, when sown early, than yellow turnips. In a week or ten days after the first lot of cattle is taken up from grass, a second lot is taken up. This is a further relief to the pastures, and the cattle left in the fields thrive better. This taking up continues every week or ten days to the end of September, when other lots are taken up. At this period all feeding cattle ought to be under cover that are intended to be fattened during the succeeding winter. The stronger cattle are drafted, and the lesser ones left until the last cull is put under cover. It would be no use to attempt to feed cattle, except you can command a staff of experienced men to take charge of them. However faithful, he must have a taste and a strong liking to cattle—they must be his hobby. Even with men of the greatest experience the difference in the thriving of the different lots upon the same keep is great. They must not be oppressed with having too many in charge, or else it would be the loss of the owner. From August till November a man can take care of thirty cattle very well, or a few more, if the cattle are tied; but when the day gets short, twenty to twenty-five is as many as a man can feed, to do them justice. Good cattle-men are invaluable. They must not only know what to give the cattle, but the great secret, especially when cattle are forced up for show purposes, is to know what not to give them. An inexperienced man amongst a lot of feeding cattle must be a great loss to his employer. Like everything else, it cannot be learned in a day—the cattle-man must be always learning. To speak of myself, I can only say that, for as long as I have traded in cattle, have studied their treatment, have considered their symmetry, I am learning something new every other day. In regard to the treatment of cattle when put upon tares or cut clover, there is no danger; but with turnips an ignorant man may injure the cattle in one week so much that they may not recover it during the season. The cattle must be gradually brought on, giving them few turnips at first, and increasing the quantity daily. In ten to fourteen days they may get a full supply of turnips. When improperly treated the cattle scour, they hove, the stomach getting deranged. It is a long time before they recover, and some never do well. We cure hove generally by repeated doses of salts, sulphur, and ginger. An accidental beast will hove under the best treatment, but if you find a lot of them blown up every day, it is time to change their keeper. In cattle that are forced for exhibition, hove is the first warning generally that the constitution can do no more. I have seen cases so obstinate that they would swell upon hay or straw, without turnips. Putting the animal out to grass for a couple of months will generally renovate the constitution, remove the tendency to hove, and, after being taken up from grass, with a man in charge that knows what to give and what not to give, the animals may go on for a few months longer, and with great attention may at last prove a winner. There are some animals that any amount of forcing will not derange their digestive organs, but they are very few. Cattle feeding in the stall should be kept as clean, and their beds should be as well shaken up, as that of the hunter or racehorse. I change the feeding cattle from tares and clover on to Aberdeen yellow turnips, and afterwards to swedes, if possible by the middle of October. I do not like soft turnips for feeding cattle. The cattle that I intend for the great Christmas market have at first from 2lbs. to 4lbs. of cake a-day by the 1st of November. In a week or two I increase the cake to at least 4lbs. a-day, and give a feed of bruised oats or barley, which I continue up to the 12th or 14th of December, when they leave for the Christmas market. I apportion the cake to the condition of the different animals, and some of the leanest cattle get the double of others that are riper. The cattle being tied to the stall gives you this in your power, which you could not have in the straw-yard. When ten or twenty beasts in the straw-yard stand together, the strongest takes the greatest share, and those very often the animals that least require it. I consider the stall a great advantage over the straw-yard in this respect, as you can give each beast what you wish him to have. I point out to my men the quantity of cake and corn I wish every beast to receive. You must have all observed the inequality of the improvement of cattle in the straw-yard when ten, fifteen, or twenty beasts are fed together. I have seen the best beast in a lot when put up the worst when taken out. The first three weeks the cattle are put upon cake along with their turnips, they will put on as much meat as they will do with an equal quantity of cake for the next five weeks. It is absolutely necessary to increase the quantity of cake and corn weekly, to ensure a steady improvement; and if cattle are forced upon cake and corn over two or three months, in my opinion it will pay no one. To give unlimited quantities for years, and to say it will pay, is preposterous. To give fat cattle the finishing dip, cake and corn, given in moderation and with skill, for six weeks before the cattle are sent to the fat market, will pay the feeder. To give cattle cake and corn for more than two months will never pay the feeder in Aberdeenshire. This is no doubt a bold assertion, but I believe it to be correct. The cake and corn given to cattle day by day loses its effect, till at last you bring the beast almost to a stand-still, and week after week you can perceive little improvement. The cake, and especially corn, appear to injure their constitution: grass, turnips, and straw or hay is their only healthy food. For commercial cattle and for commercial purposes two months is the utmost limit that cake and corn will pay the Aberdeenshire feeder. There can be no substitute for grass, straw, and turnips, except for a very limited period. In times of scarcity, and to give the last dip to fat cattle, they are valuable auxiliaries. I have kept on a favourite show bullock for a year, thinking I would improve him, and gave him everything he would take; and when that day twelvemonths came round he was worse than a twelvemonth before. You can only torture nature so far, and if you force a yearling bullock he will never come to the size that he will do if kept on common fare. If you wish to bring a bullock to size for exhibition, give him as much grass and turnips as he can eat. Begin to force only when he is three years old, and by the time he is four years he will not only be a neater but a larger animal than if he had been forced; forcing in youth deteriorates the symmetry of the animal as well as diminishes the size. I speak only of Aberdeen and Angus cattle; but I believe the breeders of Highlanders are well aware of this fact. I am not speaking of pounds, shillings, and pence, or of the profit to the farmer—for who would think of keeping beasts bred to himself older than rising three years old? Calves dropped early should go to the fat market at the age of two years. A word as to show bullocks. I believe they are the most unprofitable speculation an agriculturist can interfere with. To keep a show bullock as he ought to be kept will cost from 12s. to 15s. a-week, which amounts to about £40 a-year. The method I adopt as to using cake and corn is the following: On the different farms where I feed the cattle I put a fourth part of their number only upon cake and corn at one time, and six weeks (which is about my limit of time for cake and corn, &c., paying the feeder) before they are to be sent to the fat market. When the six weeks are expired they are sent away; another fourth part of the original number take their place, and get their six weeks cake. When they leave, the other cattle, in succession, get the same treatment. When turnips are plentiful, the system works well. The cattle draw beautifully, week by week, from the different farms, and come out very ripe. I may mention that almost all the cattle I graze are generally kept during the previous winter upon as many turnips as they can eat, and are in high condition when put to grass. I am confident that in the south of Scotland—where there is more corn and less grass land—this method would not be suitable. Large bills for cake are not easily paid, and when paid swallow up our profits. When cattle are fed almost exclusively upon the produce of the farm the feeders know what they are about, but this method of feeding requires time and patience, and there is a long outlay of capital; but if the system is adopted, and judiciously managed, upon medium or high-lying and low-rented land, the cattle treated as above ought to pay the rent, and leave a fair profit to the feeder. There is no doubt that in the north, and especially in Aberdeenshire, there is a rage for fine cattle; and on my part it has almost amounted to a "craze." I would have been a richer man to-day if I had not been so fastidious in my selections; but I cannot endure to look at, and never will tolerate, a bad beast on my land. The gentlemen I buy from know my weakness, and they say if they are anxious to sell we must let M'Combie have a "pull." Many are the lots of beasts I have bought and culled, and I had to pay for it. Sellers have served me right. Still there is a fatality follows me that I fear it is hopeless now to endeavour to get over. A good bullock will always be a good one, and will easily be made ripe—requiring little cake or corn—and come right out at last. I have adopted the following system in the selection of the cattle I have wintered: I have bought the best lots I could find during the summer, fit for wintering and keeping on to the following Christmas. I have culled the worst of the different lots; I have fed the culls and wintered the tops: by this method I secured a lot of wintering cattle for the great Christmas market of the ensuing year without one bad or indifferent beast among them. The price I have obtained for several years, with the exception of the culls of my winterers, has been £35 a-head. In Aberdeenshire I consider that a large bullock ought to pay 25s. to 30s. a month for keep if he is properly treated. We often get less, and sometimes a little more, owing, in some measure, to how the cattle are bought, also to the price of beef at the time, the season of the year the cattle are bought, and the time they are sold. Before we were threatened with the cattle plague, I always made a point of buying my beasts early in the season, beginning in January and buying monthly up to May. I had thus a chance of the best lots, whereas if I deferred making my selections, the best lots went into other hands; but the cattle plague has put me sadly about, and my cattle may make a poor appearance next winter—the M.X.C.'s, as they are called (which is my brand) must be fewer in number and not of such equal quantity as in previous years. I wintered forty store cattle, and I have bought several other lots of cattle, but I have not above one-half of my usual number of feeding cattle on hand. Midsummer-purchased cattle have never paid me much. The first improvement of cattle in the season is always the best. With the cattle plague came a panic. The plague was amongst us several times. It was within five miles of my stock. I bought 830 sheep—animals I know as much about as they know about me. I have ploughed more land than usual, and I intend to make some hay. I have got into a large stock of breeding cattle.

SHEEP FOR VARIOUS SOILS.

LOGIE AND LECROFT FARMERS' CLUB.

At the quarterly meeting of the Logie and Lecroft Farmers' Club, Sir James E. Alexander, Westerton, president of the club, in the chair, Mr. Henderson, of Craigarnhall, read the following paper on the best breeds of sheep for the various soils:—

The subject fixed on at our last meeting was—"The most profitable breed or cross of sheep for clay soils, and the most profitable breed or cross for dry-field soils." In regard to the different methods followed on dry-field farms in the neighbourhood, the oldest system we are acquainted with is that of buying, in the autumn, cast-hill ewes (either blackfaced or Cheviot); to take one crop of lambs; to sell the lambs in June or July, and the mothers in the autumn. This is a sort of stock that is best adapted for secondary soils, where very good lambs may be made, and where it may be very difficult to get any other kind of sheep made fat. The lambs are often better on this kind of land than where the grass has to be crowded with sheep to keep it down. It is a stock that has this recommendation—that it is not costly at first, that it can be cheaply wintered, requiring, if any, only a few weeks' turnips in spring; and where there is any rough or unimproved land on a farm, it may be wintered without them altogether—produce as good lambs, and be fully as good milkers as those better cared for with turnips. It is said of this kind of stock, that although cheaply wintered, it eats up a farm too much, so that it tends to keep poor land still poorer; and that when the ewes are put on turnip, so many of them lose their teeth that they do not do well afterwards; that they are a troublesome stock, requiring a deal of attention, and ill to keep within fences; that they have a fleece both small in quantity and bad in quality; and that the ewes, from being inferior mutton, do not sell to advantage. Another method with this sort of stock is to keep the lambs for store sheep, either in whole or in part. This is a preferable plan, should it be intended to consume the turnip grown on the farm by sheep, as hoggets will pay more for the turnips than ewes; while fewer ewes will be required, and more justice can be done than by allowing them to roam over all the grass on the farm, which will go farther than when the whole stock are ewes; and should the hoggets be well seen to, they can be sold at any time after the first clip. One year's clip of ewe and hoggets' wool will be worth two of ewes alone. Where nothing but ewes are kept, hill-wedders are sometimes bought to eat the turnips. This is, perhaps, the most precarious stock the farmer can have to do with (great eaters and slow feeders); and from the time they are kept, no clip comes off them. A cross or half-bred sheep will make more mutton in one month than they will do in three. The feeder is more indebted to a rise in the price of mutton, to enable him to come out with them, than to the weight of mutton acquired when in his possession; and should mutton fall, his only comfort may be the manure they have left. Where what is called a regular stock is kept on arable land—it is generally a cross, a half or three-fourths bred stock—or in some way related to the Leicester or Cotswold. The crosses with the Southdown have become things that were, the small quantity of wool they clip having brought them into disfavour. On a farm of medium soil no better breed can be had than a half-bred stock—a breed of all others to be preferred in this district, where hardihood as well as tendency to fatten is so much wanted. A stout-bodied, long-sided, rather close-woolled sheep, seems the model for our district—sufficiently hardy to stand up against the storm, and bear the knocking-about consequent on the folding on turnip, yet quiet enough to settle within anything in the shape of a fence. With a stock of this kind no more ewes should be kept than will allow of every ewe being kept off to at least the first clip. The principal object of the stock farmer being to produce as much mutton and wool as possible, I hold that no other known breed of sheep can successfully compete with the half-bred, the mutton being of medium quality, and the wool, taking quantity and quality into account, is the most valuable our country can boast of. The farmer who is in possession of a full stock of half-bred breeding sheep may consider himself a lucky fellow at this moment. As to a regular stock of full-bred Leicesters, much may be said on both sides as to their suitability for the soil and climate of the district. Unless a farm is particularly well adapted for sheep, both as to soil and shelter, the profitableness of a full-bred stock is rather doubtful. The cost price of such a stock at first, and the necessary expenses afterwards, are greater than will pay to grow mutton and wool. Whichever way the case may stand in other districts, I can answer for ours, that a half-bred will beat a full-bred stock both for weight of mutton and weight and value of wool. To say that Leicesters will suit any arable farm, as is often advanced, is simply ridiculous. The more the farm is unsuitable, the more will be the cost incurred, and the greater will be the draught that will go to the fat market as unfit for breeding purposes. The care and attention Leicesters must have being as contrary to the notions of people accustomed to sheep here, and so ridiculous in their eyes, it is difficult to get one sane enough to give them due justice. A Highland shepherd, with a coarse dog, coming among a flock of Leicesters, is nearly one of the greatest evils that can possibly come amongst them. The nearer to perfection any breed comes, the less, it would appear, are the sheep able to do for themselves. With so many obstacles in the way, a Leicester stock may be said to be unsuitable. The last method I shall notice as being adapted for our dryfield farms is—the buying in of store lambs when taken off their mothers, either cross, half, or three-fourths bred, and keeping them on for one or two years. Of all the systems followed in the management of sheep on dry-field farms I would be inclined to give this the preference, as being attended with less trouble and more profit than the others. Where the average quantity of turnips is grown on a farm, the stock being all of one kind, and being in a state of progress for the fat market, the same kind of food will suit them all. With a mixed stock great inconvenience often arises, from being obliged to put them together, especially in winter. Should the grazing of the farm be inferior, the sheep will pay fully as well to give them another winter's turnip, and get the second clip of wool before parting with them. Now again rises the questions we were discussing at last meeting regarding cattle—At what age is it most profitable to feed off? and Can the growing and feeding be profitably carried on at the same time? My own impression is, and has been, that we go wrong in not letting the growing to be further advanced before beginning the feeding, and that there is a loss incurred in feeding so soon—that, considering the extra food required to make a hogget fat, less cost of food will make a better sheep at two years of age, with a second clip of wool to boot. This stock also produces the largest and most valuable clip, hogg wool being always in most request, and the second clip being next in value, care always being taken to keep the sheep in a state of progress—standing still, or retrograding, tells at once on the wool, and its value is irretrievably depreciated—and what the sheep loses involves a loss of food in making it up again. To guard against this, hoggets should always be taught to eat cake and corn as soon as put on turnip, if not before, whether the cake and corn are to be continued with them or not; so that, should they be deprived of turnip from any cause, they may be immediately kept on something else. This comprehends the most prominent methods of farming with a sheep stock on dry-field soils. As to "a breed or cross-breed of sheep suitable for clay soils," allow me to remark that, although I have had a good deal to do with sheep on clay soils, I have not yet fallen in with any breed altogether adapted for a clay soil like what we have to deal with here. In favourable seasons little difference between carse and dry-field may be observable, but this is the exception; for, in most cases, where pasturing of clay land is attempted, either the sheep spoil the soil, or the soil the sheep, and occasionally both go wrong at the same time; and in wet springs, like some we have lately had, clay is totally unfitted for the grazing of sheep. Sheep will almost accommodate themselves to any soil, climate, or food—from the top of the highest mountain in Wales to the fens of Lincoln; and to all kinds of food—from the seaweed and dried fish in Orkney, to the richest clover in the Carse of Stirling. On clays, with nothing but the usual sown grasses, sheep will eat the coarsest herbage round the hedge sides, and even the bark of the hedge itself, for a change of food. The same grasses sown on clay do not appear to have so good a taste for sheep as on dry-field. It is also observable with turnip of one kind grown on clay and light soil: if thrown out together, sheep will eat those grown on the light soil in preference to the other. We also see how anxious sheep folded on turnip are for a change of food, and with what relish hill sheep, when on turnip, enjoy a taste of their native heather. Where the pasturing of clay is persisted in, a field of old grass or a field of light soil must be at hand, for a change in case of wet, or for a change of food. A breed of sheep to suit clay soils, and be as free as possible from disease of the feet, must be some quiet breed—the Leicester or Cotswold, or some of their affinities. Hill sheep, of all others, must be avoided; their restless habits occasion a deal of unnecessary trampling of the soil, and their feet have a greater tendency to go wrong, from being naturally stronger, and from the tear-and-wear they are subjected to on the hills. Pasturing the second crop of clover is a first-rate opportunity of making a lot of lambs good; in fact, it can scarcely be wanted for lambs when taken off their mothers; no kind of pasture, even with cake and corn, is equal to second crop of clover and the young grasses after the corn crop is removed. Lambs might be a very suitable stock for clay farmers to put on clover, and then to finish off in the yard with turnip during the winter. This is another topic which naturally comes in for discussion—Yard or court feeding; or how is the turnip on the farm to be consumed, and the straw of the clay farm to be made into manure by sheep? Court-feeding of sheep, like soiling of cattle, has been long talked of; but has not come into general practice, from the simple reason that neither of them is supposed to pay. The dry-field farmer can take his sheep to the turnip, and leave the manure there; while the clay farmer must drive his turnip to the sheep, and his manure back again. But if it pays to drive turnip home to cattle, I can see no reason why it will not pay to drive for sheep—mutton being as high-priced as beef, and wool and mutton, taken together, much higher. Twenty cattle and one hundred sheep are supposed to eat about the same, and the same space of court and the same quantity of litter to keep it dry—the sheep, if anything, requiring more—so that there is no fear of manure, provided there is plenty of straw. The primary hindrance to this kind of feeding, with those who generally have a sheep stock, is the want of straw. A clay farm is just the place for court-feeding sheep, where there is such an abundance of straw.

HORNETS' NESTS.—Knowing from experience the difficulty of assaulting a hornet's nest, I asked Mr. Stone how he performed the task, and was told that his chief reliance was placed on chloroform. Approaching very cautiously to the nest, he twists some cotton wool round the end of a stick, soaks it in chloroform, and pushes it into the aperture. A mighty buzzing immediately arises, but is soon silenced by the chloroform, and as soon as this result has happened, mallet, chisel, and saw are at work, until the renewed buzzing tells that the warlike insects are recovering their senses, and will soon be able to use their formidable weapons. The chloroform is then re-applied until they are quieted, and the tools are again taken up. The extrication of a nest from a hollow tree is necessarily a long and tedious process, on account of the frequent interruptions. Even if the insects did not interfere with the work, the labour of cutting a nest out of a tree is much harder than could be imagined by those who have not tried it.—*Homes without Hands; by the Rev. J. G. Wood.*

THE BATH AND WEST OF ENGLAND SOCIETY.

MEETING AT SALISBURY.

The title of this Society, when given in full, runs on as established "for the encouragement of Agriculture, Arts, Manufactures, and Commerce," a comprehensive design that for some years past has been very carefully carried out. All the sister-sciences have come to be well represented here; and although Agriculture may take the lead, each several section of the show has had its own individual interest and attraction. For divers considerations, then, the Council came to a very judicious conclusion when it decided that, despite the impending dangers of the cattle plague, the meeting of 'sixty-six should not fall through. Even admitting that many of the more substantial dishes would be wanting, there still might be sufficient to furnish a very agreeable entertainment; and as nothing is known to pay so badly as shutting-up shop, the reputation of this old and flourishing concern is very handsomely saved by the course adopted. Whether the panic affect agriculture, manufactures, or commerce, we cannot afford to encounter the attack with closed doors; and it must be far better and wiser to go on, though we may lose a little money by so doing, than to suffer our name to die out for awhile from the institutions of the kingdom.

Could the West of England Society only have dared to go a little further, and have included the usual sheep classes at a meeting held in the capital of a sheep country, the success of the Salisbury Show would have been, as we believe, something extraordinary. But as prudence forbade this, the more available means had to be worked up as closely as possible, and certainly not without some proportionate results. There was, for instance, to be seen here during the past week one of the finest collections of agricultural implements ever brought together; a display that only required the wholesome incentive of premiums to have made a yet stronger mark on the public mind. There is no such "impression" as a competitive trial, where people are fairly matched against each other, and their several places at the finish officially recorded. Still, as it was, the almost interminable avenues of stands, and the bold front of steam engines at work, were duly pointed by certain field-trials, where, if nothing more can be said, we may assume that every man did his best. Again, the more fanciful or ornamental of our manufactures were, as usual, sufficient to set up a separate bazaar, through which one walked with as imminent danger of his purse jumping out of his pocket as he might when sauntering through Regent-street or up the Burlington Arcade. Then, there was the picture gallery, and an Art Union in association therewith; a flower show faced by a military band, and a poultry show, as Mr. Tegetmeier declares, very commendable for the season of the year, although the exhibitors of plump Dorkings, varmint Game, or dainty Nuns, play such tricks before high heaven as might make the little angels weep who did not happen to win. Sheep-trimming, pig-jobbing, or horse-coping, is nothing to that which some of these fanciers try on with the judges. They will cut the comb off a cock's head, and forthwith sew on a more orthodox helmet; they pull out feathers by the handful if not of the right colour, or artistically shade any objectionable plumage to the proper hue. We are not quite sure but that, like Piscator, who won his wager by stuffing his pike with pound weights, they may not cram a bird occasionally with shot or lead pudding, so that he may tell the better when put in the scale. But is there no punishment for such offences? or, if an Agricultural Society cannot interfere, surely a Humane Society might? Rather late in the day a move was made in another direction, and a dog show organized under the auspices of the Council, although the prizes were not sufficient to obtain entries of any very remarkable merit; whereas the premiums for horses, on the contrary, were so liberal that it is somewhat hard to understand why the classes were not better filled. The Bath and West of England Meetings have, however, from the time of their resuscitation, had continual difficulties to encounter in this way, more particularly as regards the riding-horse section; not, though, but that these would appear to have been gradually overcome, as the horse show at Salisbury was quite up to the average of these occasions, if it did not altogether satisfy a public that, so far as live stock went, had little else to look at. Moreover, had the Council only consented to break through its own rules, the entries of horses would have been far more numerous, as by some curious and inexplicable chance many intended exhibitors neglected to forward their nominations until after the closing-day. Still, taking our standard by all that actually was sent, we see no reason to despair of the Bath and West of England Horse Show; and had some of the offers, such as those for thorough-bred stallions, hunters, and hacks, only been a little better supported by the neighbouring country-gentlemen, there could have been little or no cause of complaint, as the agricultural horses mustered in some force, and the class of draught mares was especially well filled. The cart-stallions were arranged in two divisions, the one for "heavy draught," and the other for "general farm work"; although this distinction was not very closely observed by some of the exhibitors, far away the best dray-horse being in the general-purpose class. This was Mr. Gibbs' grey, Sampson, a grand weighty animal, with two good ends, a nice head and neck, and a deal of fine character; but better to stand alongside of than to put round the ring. His second, on the contrary, Mr. Hitchcock's three-year-old, has all the light springy action of the Clydesdale, to which he traces back on his sire's side, though a chesnut in colour; while he is furnishing into a smart clever horse, and in every way fulfilling the promise he gave at Hereford and Plymouth last year, at both of which meetings he also took prizes. The commended one of this class was Sir Edward Kerrison's Suffolk, another prize-winner that has gone on well; though a trifle slack in his back, but a good mover, and with a deal to like about him. The West-country judges, however, were not, as might be imagined, much taken by the Suffolks, and one of the first horses they drafted was Mr. Badham's famous Chester Emperor, with, as we must admit, every reason for so doing. Indeed, beyond his neat, almost pretty head, there was little to know the old horse by, as he was as flat in his sides as a deal board; and but for his heavy-loaded crest, altogether faded and shrunk away, so that as a show-nag his day must be nearly over, particularly with so clever a son as Mr. Rist's stallion to take his place. Mr. Parson Terry had a nice stylish horse in this class, and Mr. John Smith, of Bynoll, another, with some good about him; but it is difficult to understand how the Reverend John Gay Coppleston, Mr. W. H. Gale, or Mr. Perry, of Christchurch, could ever have been sanguine enough to send the things they did to Salisbury, with the object of improving our breeds of horses. The heavy draught class was not so well supplied, and we confess to liking the second prize horse better than any of the others. This was Mr. Church's black Champion, an active, compact animal, with plenty of power and true action; whereas Mr. Fowle's horse is a slouching loose-framed one, light in his thighs, and by no means striking in his appearance, even at first sight. But the competition beyond the prize-winners was not great, and Mr. Hibbard's entry, as well as one of Mr. Thatcher's, went all to the other end of the class. There was only one two-year-old in the heavy-weight division, and he had no merit, but the judges were just enabled to award the two premiums over the animals of the same ages, as said to be suited for general farm work; and Mr. Gale's colt is a clean active one, of some character, while there is little to fancy in the Suffolk placed second, who begins badly with a terribly sour mourning-coach kind of head. One of the best, if not, as we have already said, the best class on the ground, was that for draught mares with foals or in-foal, and half-a-dozen very good might have been picked out from the entry. Mr. Fowle's first is a really fine, rich, well-shaped mare, very broad and roomy, and Mr. Hibbard's second big, useful, and deep, as worthy of her place. The third or commended mare stands rather high on her leg; Messrs. Howard's brown, a previous winner, lacks little but show condition; and Lord Radnor's Suffolk, from the stock of Jonas Webb, is handsome and showy enough to warrant some notice; as, in fact, the class very nearly escaped a general commendation. The two-year-old prize fillies were both creditable, but Mr. Terry's, a very middling one, light and narrow, without many other redeeming qualities. For the pairs of working-horses Mr. Holland had a walk-over with two serviceable browns, but the West Country can make no stand in the way of prime pairs, when compared with what they turn out in Yorkshire or the Midlands.

If, as will be gathered, there was on the whole a very fair show of draught horses, the nags had also their strong places, and the class of four-year-old hunters was about the best this Society has ever got together. The first prize, indeed, is a wonderfully nice colt, and, up to a certain weight, very nearly perfect. He unites the style of the race-horse with the "manners" of a riding horse: with a sweet head and clean neck, he already bends beautifully to his bridle, and with finer handling than he had at Salisbury would be quite a pattern card in the ring. He is a somewhat gaily marked chesnut, with the Blair Athol, or rather his own sire, the Bald-faced Stag's "white-washings"; but white rather sets off a chesnut if he has only blood to back it, and the Prior's chief eyesore came from his trying to kick himself to pieces in the train. Mr. Battams, who did so well at Plymouth, finished second and third here with a couple more chesnuts by Ratan, of which the preferred, but for his being so short forward, has all the markings of a hunter about him. The other from Tavistock is the most powerful horse of the entry; but terribly raw and awkward, with naturally bad action, which will require a deal more tutoring than his owner's people appear equal to. Another nice horse in this lot is Captain Heygate's Mountain Dew, by the Era out of Whiskey, by Windhound, and an own brother to Denmark, that was first as a two-year-old at Hereford, and first again here as a three-year-old; but in a class of three there was now virtually no competition. The brown is a wonderfully big-limbed, up-standing horse; but he will still take a deal of time, and we should like to see him a year hence before we altogether pronounced on his merits as a hunter. The second in this lot was a softish looking nag by Drogheda, and the third, from Cowbridge, a very bad sample of Revenge's stock. Of the yearlings, Mr. Cozens' roan, by Robert de Gorham out of Mistletoe, by Rattle, was so handsome and bloodlike, so corky and so much of a race-horse, that he might have fetched three or four hundred at Middle Park or Hampton Court, as at Salisbury he placed himself, with a smart small Camerino colt of Mr. Webb's for second, and a plain Malacca filly for third, "in case of accidents." The hunting stock, the President, Lord Portsmouth's favourite classes, are thus training on; but the sires and dams were not so well represented, there being only three entries in each class of "thorough-bred stallions calculated to get weight-carrying produce," and of "mares calculated to produce weight-carrying hunters." The three horses are, however, pretty well known, Hunting Horn by Surplice out of Ferina, by Venison, having taken the Royal Agricultural Society's prize at Warwick; The Bald-faced Stag having been second to Ratan at the West of England Meeting at Exeter, and first in the second class of thorough-bred stallions at the Royal Plymouth Show, as Young Touchstone has also often tried his fortunes in the Ring. With the weight-carrying clause the decision could only go one way, Hunting Horn being a horse of immense power and substance, though rather coarse, and, unless upon picked mares, more calculated to get grand carriage horses than first-class hunters; whereas the Bald-faced Stag, as proved by his son The Prior, is the more eligible stallion of the two for the purpose. But judges can only go by what they see before them; and the Stag himself is a big-topped, jumped-up horse, all of a heap in fact, and, as far as appearances go, a deal more like getting cobs than hunters. Moreover he never settles down to any one pace, whereas Hunting Horn, despite his standing over from age, still walks away like a gentleman. Over the mares only a second premium was awarded to a very varmint rather vulgar old mare from Cowbridge, in anything but review order, but with many good points about her; while one can only wonder at so experienced a man as Mr. Dickenson sending such a weak, short-quartered animal as his Confederate mare into a class of weight-carriers. Of the two hacks, Lady Herbert's handsome chesnut, with the best of hind leg action, and a deal of power for his size, was at once preferred to a brown of Mr. Milward's that had been substituted for British Queen, who showed so well at Islington. The change was all for the worse, as Crisis is vulgar and heavy-foward, though with high Piccadilly action; and Mr. Milward got no nearer than second again, even amongst the ponies, with a very neat Bobby mare, where Mr. Rawlence, of Bulbridge, had entered one of the very sweetest "little horses" ever seen. With a beautiful head and clean neck, famous thighs and quarters, and full of bloodlike character, this is not only a hunter in miniature, but a hunter in actual fact, having gone brilliantly on many occasions with the South Wilts and other packs, when in the possession of Mr. Pain. The few New Forest ponies were fairly "saved" by the presence of the *truest* pony on the ground, Mr. Neave's Nobby, quite a wonder at her age of 22 years, supported, as she was, by two of her produce—a three and four year old, but already as perfect a match as any man could wish to lap in leather. As for Nobby, though her action may have gone a bit, she should still be almost invaluable as a child's playmate.

The poultry show is said to be one of the most successful ever recorded in the Society's annals. There are upwards of 300 pens, being nearly 90 in excess of the number at Hereford last year, and there is evidently more interest attaching to this branch of the business of late, as men are talking as learnedly about pedigree in fowls as in horses, horned cattle, sheep, pigs, or wheat. Considering the season, the Spanish are in exceedingly good feather, and with these and the Dorkings, Lady Holmesdale stands well on the prize-list. The white Dorkings are of beautiful quality and great weight; the Cochins are less popular than they were, and are not here well shewn, while the Brahma Poutra fowls take their place; and breeding birds of the Dorking and Brahma classes fetch high prices now-a-days. Their first cross gives a hardy forward chicken, and a splendid table bird. Of the Brahmas, the dark feathered are most esteemed, and here show to much advantage. The game fowls are usually shabby and ragged at this season, as they always give way before moulting, and lose that gay, spiry look which generally characterises them. There were some capital specimens of Malays and Minorca fowls, and silver-laced Seabright bantams, together with white and black game bantams in fine condition, the Rev. G. S. Cruwys, of Tiverton, exhibiting most successfully. The black and white crests of the Polands show them off to great advantage, as does the beautiful plumage of the Spangled Hamburgs, in both classes. The Aylesbury exceed the Rouen ducks in quality; but, as a judge whispered it, spotted bills are repudiated by the Aylesbury breeders. In both the duck and goose classes Mrs. Leamons of Aylesbury, was most successful; the first prize being awarded in geese to a white, the second to a grey bird. The turkeys made a good show, and guinea-fowls stood true to their colours. The many mysteries of trimming are now absorbing the minds of pigeon fanciers, and there is a determination on the judges to disqualify right and left whenever they detect any attempt to deceive. The Nuns got into disgrace from this cause, but the other classes were generally commended.

The dog-show was the least successful feature of the proceedings. It was wanting, in the first place, in "the nice conduct" of the West of England meetings; and, as we have already said, the premiums were too trifling to command much attention. Still, there were a few good setters, some smart bull-terriers, and more to pick from amongst the fox-terriers, where Mrs. Pain exhibited a very varmint one, of John White's famous sort—a character in itself. This section of the show may no doubt train on, as we are assured the small grant given was something of a mistake, through the houndsmen not being present when the vote of supply was passed.

PRIZE LIST.

HORSES.

FOR AGRICULTURAL PURPOSES.

Judges.—A. Lovibond, Bridgwater.
V. B. Watts, Blandford.

Stallions, above two years old, suitable for heavy draught.—First prize, £50, to W. Fowle, Market Lavington, Devizes (The Benicia Boy); second of £25, to E. Churches, Godney, Wells (Champion).

Entire colts, foaled in 1864.—Prize withheld.

HORSES FOR GENERAL FARM WORK.

Stallions, above two years old.—First prize, £50, to E. Gibbs, Chitterne, Heytesbury (Sampson); second of £25, to H. Hitchcock, Chitterne All Saints, Heytesbury (Albert). *Commended:* Sir E. Kerrison, Bart., Broome Hall, Scole (Ploughboy).

Colts, foaled in 1864, suitable for light draught.—First prize, £20, to W. H. Gale, Manor Farm, Burbage, Marlborough; second of £10, to W. Taylor, Harptree Court, Somerset (Master of Ravensworth).

Mares and foals, or in-foal.—First prize, £15, to W. Fowle, Market Lavington (Trojan); second of £5, to J. Hibbard, Stanton St. Quintin, Chippenham (Blackbird). *Commended:* H. Hitchcock (Smart)

Fillies, foaled in 1864.—First prize, £10, to the Rev. H. G. Baily, Swindon; second of £5, to the Earl of Radnor, Coleshill House, Highworth.

Pairs of agricultural horses, not exceeding six years old, having been in the possession of the exhibitor six months previous to the day of entry.—First prize, £10, to E. Holland, M.P., Dumbleton Hall, Evesham (Punch and Darby). No further competition.

HUNTERS, HACKS, AND PONIES.

Judges.—H. Corbet, Farmers' Club, London.
H. Thurnall, Royston.

HUNTERS.

Thorough-bred stallions, calculated to get weight-carrying produce.—First prize, £50, to T. Hopkins, Woodgate, Culmstock, Wellington, Somerset (Hunting Horn); second of £20, to R. G. Luxton, Brushford, Wembworthy, Devon (The Bald Faced Stag).

Mares, calculated to produce weight-carrying hunters.—Second prize, £5, to R. N. Hooper, Llansannor Court, Cowbridge (Confidence).

Mares or geldings, foaled in 1862).—First prize, £30, to R. G. Luxton, Brushford (Prior); second of £20, to G. B. Battams, Kitworthy, Tavistock (Taviton). *Highly commended:* G. B. Battams and Captain E. N. Heygate, Buckland, Leominster (Mountain Dew).

Fillies or geldings, foaled in 1863.—First prize, £15, to Captain E. N. Heygate (Denmark); second of £5, J. to Woodcock, Netherhampton, Salisbury.

Colts or fillies, foaled in 1865.—First prize, £10, to R. Cozens, Manor Farm, Pilton, Shepton Mallet (Bold Robin); second of £5, J. W. King, West Everley, Marlborough.

HACKS.

Mares or geldings, not more than six years old, nor exceeding 15 hands high, calculated to carry not less than 14 st.—First prize, £25, to Lady Herbert of Lea, Milton House, Salisbury (Etna); second of £10, to R. Milward, Thurgarton Priory, Southwell, Notts (Crisis).

PONIES.

Mares or geldings, not exceeding 13 hands high.—First prize, £10, to J. Rawlence, Bulbridge, Salisbury (Apricot). *Highly commended:* R. Milward (Lunette). *Commended:* J. C. Isaac, Sunnybank, Bristol (Jack).

Pairs of ponies.—Prize withheld.

Ponies, bred in the New Forest, under 14 hands, of any age.—First prize, £5, to W. Taunton, Redlynch, Salisbury; second of £3, to W. Reynolds Neave, Fordingbridge, Salisbury (Nobby).

Pairs of ponies.—Prize of £5, to W. Reynolds Neave.

POULTRY.

Judges.—T. Challoner, Chesterfield.
E. Hewitt, Birmingham.

Spanish—Cock and two hens,—First prize, £3, to the Viscountess Holmesdale, Linton Park, Staplehurst; second of £2, to E. Jones, Berkeley-place, Clifton; third of £1, to R. Wright, Holloway-road, London. *Highly commended:* T. Bamfield, Clifton-place, Clifton and A. Heath, Calne. *Commended:* The Rev. J. de la Saux Simmonds, Chilcomb Rectory, Winchester.

Dorking (Coloured).—Cock and two hens.—First prize of £3, to the Viscountess Holmesdale; second of £2, to the Viscountess Holmesdale; third of £1, to H. Lingwood, Barking, Needham Market. *Highly commended:* C. Cork, New Shoreham; C. Smith, Durnford, Salisbury; and Dr. J. D. Hewson, Coton-hill, Stafford. *Commended:* J. C. Cooper, Cooper-hill, Limerick, and Dr. J. D. Hewson.

Dorking (White).—Cock and two hens.—First prize, £3, to H. Lingwood. Second of £1, to H. Lingwood. *Commended:* T. Panton Edwards, Lyndhurst.

Cochin-China (Cinnamon and Buff).—Cock and two hens.—First prize, £3, to C. Jennison, Bell-vue Zoological Gardens, Manchester; second of £2, to J. Cattell, Lime-villa, Bristol-road, Birmingham; third of £1, to Miss Julia Milward, Newton St. Loe, Somerset.

Cochin-China (Brown and Partridge Feathered).—Cock and two hens.—First prize, £3, to J. Stephens, Walsall; second of £2, to Mrs. H. Pigeon, Furzedown, Hythe, Southampton; third of £1, to J. C. Cooper, Cooper-hill, Limerick.

Cochin-China (White).—Cock and two hens.—First prize, £3, to R. Chase, Tindal-street, Balsall-heath, Birmingham; second of £2, to F. W. Zurhorst, Belville, Donnybrook, Co. Dublin; third of £1, to R. Chase.

Brahma Pootra (Dark).—Cock and two hens.—First prize, £3. to G. H. Roberts, Penwortham, Preston; second of £2, to J. Hinton, Hinton, Bath; third of £1, to R. W. Boyle, Galtrim-house, Bray, Ireland. *Highly commended:* J. K. Fowler, Prebendal Farms, Aylesbury. *Commended:* J. C. Cooper.

Brahma Pootra (Light).—Cock and two hens.—First prize, £3, to J. Pares, Postford-house, Guildford; second of £2, to J. Pares; third of £1, to E. Sheerman, Chelmsford. *Commended:* Mrs. Eastan, Ovington Down, Hampshire.

Game (White and Piles).—Cock and one hen.—First prize, £3, to the Rev. G. S. Cruwys. Cruwys Morchard-court, Tiverton, Devon; second of £1 10s., to Miss Selina H. Northcote, Upton Pynes, Exeter; third of 10s., to S. Matthews, Stowmarket, Suffolk.

Game (Blacks and Brassy-winged, except Greys).—Cock and one hen.—First prize, £3, to C. Bulpin, Riverside, Bridgwater, Somerset; second of £1 10s., to the Rev. G. S. Cruwys; third of 10s., to R. Limbrick, Kenilworth.

Game (Black-breasted and other Reds).—Cock and hen.—

First prize, £3, to S. Matthews, Stowmarket; second of £1 10s., to H. Bertram, Corve, Chale, Isle of Wight, Hants; third of 10s., to G. Hanks, Quobwell Farm, Malmsbury. *Highly commended:* W. Stratton, Ropley, Alresford. *Commended:* A. Elling, Sutton Parva, Warminster; W. H. Stagg, Netheravon, Pewsey; T. L. Mills, Orcheston, St. Mary.

Game (Duckwings and other Greys and Blues).—Cock and one hen.—First prize, £3, to the Rev. G. S. Cruwys; second of £1 10s., to S. Matthews; third of 10s., to S. Dupe, Evercreech, Bath. *Commended:* E. Olding, Ratfin, Amesbury; Mrs. W. Long, Amesbury.

Hamburg (Golden-pencilled).—Cock and two hens.—First prize, £3, to F. Pittis, jun., Newport-house, Isle of Wight; second of £1 10s., to H. Beldon, Yoitstock, Bingley; third of 10s., to B. Mills, Weston-lodge; Mannamead, Plymouth. *Commended:* C. Edwards, The Grove, Wrington.

Hamburg (Silver-pencilled).—Cock and two hens.—First prize, £3, to H. Beldon, Yoitstock, Bingley, Yorkshire; second of £1 10s., to the Vicountess Holmesdale; third of 10s., J. Holland, Chesnut-walk, Worcester. *Commended:* E. J. Wingfield, Stratford, Addington-place, Maidstone.

Hamburg (Golden-spangled).—Cock and two hens.—First prize, £3, to I. Davies, Bull-street, Harborne, Birmingham; second of £1 10s., to J. Walker, Hayapark, Knaresborough; third of 10s., to A. K. Wood, Burneside, Kendal.

Hamburg (Silver-spangled).—Cock and two hens.—First prize, £3, to A. K. Wood; second of £1 10s., to H. Beldon; third of 10s., to J. Skinner, Maindee, Newport, Monmouth. *Highly commended:* J. Walker. *Commended:* Mrs. Pettat, Ashe Rectory, Overton.

Polish Fowl (Black, with white crests).—Cock and two hens.—First prize, £3, to T. Panton Edwards; second of £1, to T. Panton Edwards.

Polish Fowl (Golden).—Cock and two hens.—First prize, £3, to H. Beldon; second of £1, to Mrs. Pettat. *Highly commended:* Mrs. Pettat.

Polish Fowl (Silver).—Cock and two hens.—First prize, £3, to H. Beldon; second of £1, to J. Hinton.

Malay Fowl.—Cock and two hens.—First prize, £3, to James C. Cooper, Cooper-hill, Limerick; second of £1, to the Rev. A. G. Brooke, Ruyton XI. Towns, Salop. *Highly commended:* The Rev. G. Hustler, Stillingfleet Vicarage, York.

Minorca Fowl.—Cock and two hens.—First prize, £3, to H. Leworthy, St. John's Cottage, Newport, Barnstaple; second of £1, to R. C. Foster, Freshford, Bath. *Highly commended:* Miss Selina H. Northcote.

Crevecœur Fowl.—Cock and two hens.—First prize, £3, to C. Cooper; second of £1, to The National Poultry Company (Limited), Bromley, S.E., Kent.

Any Other Distinct Variety.—Cock and two hens.—First prize, £3, to The National Poultry Company; second of £1 10s., to H. Beldon; third of 10s., to P. P. Cother, Salisbury. *Highly commended:* J. C. Cooper; C. Coles, Fareham; E. W. Zurhorst, Dublin; R. H. Nicholas; The National Poultry Company. *Commended:* Miss Selina H. Northcote; E. Pigeon.

CLASSES FOR SINGLE COCKS.

Spanish.—First prize, £2, to the Viscountess Holmesdale; second of £1, to E. Jones, 10, Berkeley-place, Clifton, Bristol. *Highly commended:* H. Beldon.

Dorking.—First prize, £2, S. Lang, jun., Gratwicke Hall, Barrow Gurney, Somerset; second of £1, to W. R. Peacey, Cholworth, Tetbury. *Commended:* C. Hargreaves, Arborfield Hall, Reading.

Cochin China.—First prize, £2, to G. Manning, Chapel House, Springfield, Essex; second of £1, to C. Jennison. *Highly commended:* J. K. Fowler.

Brahma Pootra.—First prize, £2, to the Rev. J. Ellis, Bracknell, Berks; second of £1, to R. W. Boyle. *Highly commended:* J. H. Fowler; E. Pigeon. *Commended:* Mrs. C. Hargreaves.

Game.—First prize, £2, to the Rev. G. S. Cruwys; second of £1, to H. Bertram. *Highly commended:* G. S. Sainsbury, Hadley, Devizes.

Hamburg.—First prize, £2, to H. Beldon; second of £1, to E. J. Wingfield, Stratford, Maidstone.

Polish.—First prize, £2, to H. Beldon; second of £1, to J. Hinton.

Any other Distinct Variety.—First prize, £2, to E. Pigeon; second of £1, to The National Poultry Company (Limited).

Bantams (Gold-laced).—Cock and two hens.—First prize, £2, to the Rev. G. S. Cruwys.

Bantams (Silver-laced).—Cock and two hens.—First prize, £2, to the Rev. G. S. Cruwys; second of £1, to Mrs. Pettat. *Highly commended:* Messrs. Samuel and Robert Ashton, Mottram, Cheshire.

Bantams (White or Black)—Cock and two hens.—First prize, £2, to the Rev. G. S. Cruwys; second of £1, to E. Cambridge, Bristol. *Highly commended:* The Rev. G. S, Cruwys; T. Davies, Newport. *Commended:* F. Pittis, jun., Isle of Wight.

Bantams (Game).—Cock and two hens.—First prize, £2, to R. Tate, Leeds; second of £1, to Mrs. Pettat. *Highly commended;* J. K. Fowler, and J. Skinner, Maindee.

Bantam Cock of any variety.—First prize, £2,
Tate; second of £1, to G. Manning, Springfield, Essex.
mended: T. Davies.

Ducks (White Aylesbury).—Drake and two ducks.–
prize, £2, to Mrs. M. Seamons, Hartwell, Aylesbury;
of £1, to J. Skinner.

Ducks (Rouen).—Drake and two ducks.—First priz
to J. E. Rawlence, Salisbury; second of £1, to J. K. F
Highly commended: J. C. Cooper; G. Hanks, Quobwell
Malmesbury; and C. Edwards, Wrington.

Ducks (any other variety).—Drake and two ducks.–
prize, £2, to T. H. D. Bayly, Bedfordshire; second of
T. C. Harrison, Hull. *Commended:* Mrs. M. A. Hayne,
ington, Dorchester.

Geese (Gander and goose).—First prize, £2, to M
Seamons; second of £1, to J. C. Cooper. *Highly comm*
J. C. Cooper, J. K. Fowler, and Mrs. M. Seamons. *Comm*
Mrs. Eastan, Hampshire.

Turkeys.—Cock and hen.—First prize, £2, to J. C. Co
second of £1, to S. Lang, junr., Barrow Gurney.
commended: Miss Julia Milward, and Capt. K. P. W
Basingstoke.

Guinea Fowls.—Cock and two hens.—First prize,
T. C. Harrison, Hull; second of £1, to Miss Selina H.
cote. *Commended:* Capt. H. Adney and Mr. C. Edward

PIGEONS.

Judges.—W. B. Tegetmeier, Muswell Hill.
Harrison Weir, Peckham.

Carriers (Any colour).—Cock and hen.—First pri
10s., to R. Fulton, Deptford; second of 15s., to A.
Taunton. *Commended:* C. Bulpin, River Side, Bridgew

Tumblers (Almond).—Cock and hen.—First prize, £1
to R. Fulton; second of 15s., to R. Fulton.

Tumblers (Any other variety).—Cock and hen.)—
prize, £1, to R. Fulton; second of 15s., to H. Yardley,
mingham.

Pouters.—Cock and hen.—First prize, £1 10s., to R.
ton; second of 15s., to C. Bulpin.

Runts.—Cock and Hen.—First prize, £1, to E. Pi
Lympstone; second of 10s., to the National Poultry Com
(limited).

Jacobines.—Cock and hen.—First prize, £1, *not awa*
second of 10s., to C. Bulpin.

Fantails.—Cock and hen.—First prize, £1, to C. Bu
second of 10s., to H. Yardley.

Owls.—Cock and hen.—First prize, £1, to St. John C
try, Wimborne; second of 10s., to E. Pigeon.

Trumpeters.—Cock and hen.—First prize, £1, to C. Bu
second of 10s., to F. Key, Beverley.

Barbes.—Cock and hen.—First prize, £1, to H. Yar
second of 10s., to H. Yardley. *Commended:* E. Pigeon.

Turbits.—Cock and hen.—First prize, £1, to C. Bu
second of 10s., to H. Yardley.

Dragoons.—Cock and hen.—First prize, £1, to C. Bu
second of 10s., to H. Yardley. *Commended:* E. Pigeo
H. Yardley.

Archangels.—Cock and hen.—First prize, £1, to C.
burn, Thurton's Coal Wharf, Calls, Leeds; second of 10
H. Yardley.

Magpies.—Cock or hen.—First prize, £1, to A. C
second of 10s., to H. Yardley. *Commended:* C. Bulpin.

Antwerps.—Cock and hen.—First prize, £1, to H. Ya
second of 10s., to C. Cowburn. *Commended:* H. Yardl
C. Cowburn.

Any other New or Distinct Variety.—Cock and
First prize, £1, to F. Broemel, Lewisham; second of
H. Yardley.

DOGS.

BLOODHOUNDS.

Prize withheld.

FOXHOUNDS.

Stallion hounds, not less than two-season hunters.
of £5 to C. B. Jarrett, Bathampton House, Heytesbury

Unentered dog hounds.—Prize of £3 to C. B. Jarre

Unentered bitch hounds.—Prize of £3 to C. B. Jarr

HARRIERS.

Stallion hounds, not less than two-season hunters
of £3 to S. Pitman, Manor House, Taunton.

Brood bitches, having reared a litter of puppies in
Prize of £3 to S. Pitman.

Beagles.—Stallion hounds, not less than two-sea
ters.—Prize of £2 to E. Lywood, Middle Week, Ando

Greyhounds.—Dogs.—Prize of £5 to W. Long, Am

Greyhounds.—Bitches.—Prize of £3 to W. Long
mended: W. R. Shittler, Bishopstone.

Large-sized Pointers.—Dogs.—Prize of £2 to W.
Fulham-road, Brompton. *Commended:* F. T. D
Broadwinsor, Dorset; and R. B. Cater, Bath.

Large-sized Pointers.—Bitches.—Prize of £2 to
strong, Maiden Bradley, Wilts.

Small-sized Pointers.—Bitches.—Prize of £2 to
lence, Bulbridge.

LARGE-SIZED SETTERS.—Dogs exceeding 56 lbs. weight.—Prize of £2 to J. A. Handy, Malmesbury, Wilts. *Commended:* J. R. Bevan, Southampton; and Sir Arthur Chichester, Bart., Barnstaple.

LARGE-SIZED SETTERS.—Bitches exceeding 56 lbs. weight.—Prize of £2 to W. F. Bayly.

SMALL-SIZED SETTERS.—Dogs not exceeding 56 lbs. weight.—Prize of £2 to W. Stagg, Netherhaven, Wilts.

SMALL-SIZED SETTERS.—Bitches not exceeding 56 lbs. weight.—Prize of £2 to J. A. Handy.

RETRIEVERS.—Dogs or bitches.—First prize, £2, to J. Lynes, Salisbury; second of £1, to F. Mills, Orcheston St. Mary, Wilts. *Commended:* A. J. Adams, Devonport; and F. [illegible], Maiden Bradley, Wilts.

CLUMBER SPANIELS.—Dogs or bitches.—First prize, £1 10s., and second of 15s., to Lord Arundell, Wardour Castle, Wilts.

LARGE SPANIELS, of any other breed used for sporting purposes.—Dogs or bitches.—First prize, £1 10s., to D. Stevens, Salisbury; second of 15s., to H. Spackman, Bloomfield House, Bath.

SMALL SPANIELS, of any other breed used for sporting purposes.—Dogs or bitches.—First prize, £1 10s., and second of 15s., to C. Poulton, North Heath, Newbury.

LURCHERS.—Dogs or bitches.—First prize, £1 10s., to E. Nicholls, Holland-terrace, Holland-road, Kensington; second of 15s., to B. Littlehales, Buckshaw House, Sherborne. *Commended:* E. Nicholls.

SHEEP DOGS.—Dogs or bitches.—First prize, £1 10s., to V. Lang; second prize to S. Lang, jun., Gratwick Hall, Barrow Gurney.

BULL TERRIERS.—Dogs or bitches.—First prize, £1, to C. and E. Boyds, Ightfield, Whitchurch, Salop; second of 15s., to J. Thornley, Coronation-road, Bristol.

BLACK AND TAN TERRIERS.—Dogs or bitches.—First prize, £1, to W. H. Woodcock, Fugglestone; second of 15s., to E. Nicholls. *Commended:* E. Nicholls.

SMOOTH-HAIRED TERRIERS.—Dogs or bitches.—First prize, £1, to Mrs. T. Pain, Ugford; second of 15s., to E. Nicholls. *Commended:* F. B. Lord, Salisbury.

ROUGH OR WIRE-HAIRED TERRIERS.—Dogs or bitches.—First prize, £1, to E. Nicholls; second of 15s., to Capt. G. P. Heathcote, Hursley Park, Winchester.

SKYE TERRIERS.—Dogs or bitches.—First prize, £1, to Mrs. T. Pain; second of 15s., to Mrs. M. E. Dear, Ivy Cottage, [illegible].

FOX TERRIERS.—Dogs or bitches.—First prize, £1, to W. J. Harrison, The Langleys, Selly Oak, Birmingham; second of 15s., to Mrs. Pain. *Commended:* Capt. G. P. Heathcote, S. [illegible], and Capt. H. Adney, Remberton, Collumpton.

KING CHARLES SPANIELS.—Dogs or bitches.—The prize of £1 to E. Nicholls.

WHEAT AND BARLEY.

SACK OF WHEAT, grown in Wiltshire, or within 20 miles of Salisbury, in 1865, by the exhibitor.—The prize of £5 to W. [illegible], Chilmark (Nursery), 1865.

SACK OF BARLEY.—The prize of £5 to J. Marsh, Stratford (seed from Australia). *Highly commended:* J. Marsh, W. F. [illegible] (Chevalier), and E. C. Pinckney, Berwick St. James (Chevalier).

HONITON LACE.

JUDGE.—Mr. Hudson.

TWELVE SPRIGS, each sprig of a different flower or fruit.—First prize, £3, Mrs. E. Radford, exhibitor, Miss Marryat, designer; extra prizes of £1 each to workers, M. Bartlett and J. Bartlett; second of £2, Mrs. Scadding, exhibitor, Miss Floud, designer.

SIX BORDERS, adapted either for shawls, veils, collars, or lappets, either in fruits, flowers, or leaves, or the same broken by scrolls or arabesques.—First prize, £4, Mrs. Hutchings, exhibitor, Miss Marryat, designer.

CEINTURE, of good workmanship and design, enriched with [illegible], flowers, leaves, or insects.—First prize, £3, Mrs. C. [illegible], exhibitor, M. Hayman, designer; extra prizes of [illegible] to workers, A. Churchill, J. Munday, and F. Hussey; second of £2, to Mrs. Scadding, exhibitor, Miss Floud, designer.

POCKET-HANDKERCHIEFS, of good workmanship, form, and [illegible], worked either in flowers, fruits, leaves, or insects, [illegible] designed after nature.—First prize, £3, Mrs. C. [illegible], exhibitor, Miss Marryat, designer; extra prizes of [illegible] each to workers, Susan French, Ellen Wood, and Lucy [illegible]; second of £2, Mrs. Hutchins, exhibitor, Miss Marryat, [illegible].

[illegible] AND SLEEVES, of good form and design, and with [illegible] flowers, fruit, leaves, or insects.—First prize, £3, the Lady Trevelyan, exhibitor and designer; extra prize of [illegible] to Caroline Westlake, as worker; second of £2, Mrs. C. [illegible], exhibitor, niece of Lady Trevelyan, designer; extra prize of £1 to worker, Selina Hoare.

[illegible] OR BODY AND SLEEVE TRIMMINGS FOR A LADY'S DRESS, [illegible] workmanship, form, and design, enriched with fruit, [illegible], leaves, or insects.—First prize, £3, the late Lady Trevelyan, exhibitor, Miss Pattison, designer; extra prize of £1 to worker, Louisa Salterly; second of £2, Mrs. Hutchings, exhibitor, Miss Marryat, designer; extra prize of £2 to Mrs. E. Radford, exhibitor, Miss Marryat, designer.

THE IMPLEMENT TRIALS.

The first implements that got to work in the field were the steam ploughs. These moved out on Monday and set down ready for Tuesday, in a piece of seed land, with a thin staple, and a fearfully hard steely subsoil of chalk. There was no getting in, and when in no keeping in. No one, who was present in 1857, could help comparing the two occasions—that, with the steam problem still to be solved, all life, earnestness, and speculation, fired by the zeal of John Fowler, the pertinacity of Boydell, the pluck of Collinson Hall, and the energy of many more, with the leaders of agricultural progress all looking on, and crowding in to bear a part wherever help and sympathy were wanted—and this, when the solved problem, having cost the lives of some and the property of many, is exposed to view in a very nearly empty field. It must be confessed that Tuesday was not favourable, but the result was nearly the same on the morrow following, when the sky was propitious. At present, however, there are some obstacles in the way which must be removed, and where the farmers are not actual losers by the cattle plague, they are apprehensively sympathetic with those who are, and not to be drawn into unusual expenditure. They are looking for an apparatus at less cost than those now offered, and, by reason of the reticence of men already employing steam in tillage, respecting its results as revealed by the bushel, are uncertain of its effects. Whether the Commission about to be organised by the Royal Society and sent out to inquire into results will be able, by a conclusively favourable report, to stimulate the three or four hundred-acre farmers to avail themselves of steam, and exhibit its availability on light as well as heavy land, remains to be seen.

Fowler and Co., of Leeds, worked their small set of apparatus, consisting of a single cylinder eight-horse engine, with clip-drum under the boiler, a travelling anchorage, a balance three-furrow plough, and a cultivator. The land was not favourable for ploughing, but some fairish work was done with a 6-feet-broad cultivator, which ran at a great pace. Speed and width of implement will soon overcome the obstacles that have stood in the way of the use of steam-power on light soils. The machinest will have no difficulty whatever in sending out tackle capable of breaking-up 20 or 30 acres of light land in a-day, and of conducting all the necessary operations. Fowler first essayed to overcome the resistance of strong lands: this done, the rest follows as matter of course, and is now engaging the attention of all the chief houses embarked in such a branch of business. The work done by Fowler's plough on Wednesday, in turning a furrow on land that had been cleared of a clover crop the day previous by the competing mowers, was far better than his performance on Tuesday, and excited a deal more approval.

The apparatus of Messrs. J. and F. Howard consisted of the stationary windlass driven by a double cylinder ten-horse engine, the compensating blocks for tightening the outgoing rope, and the new patent slings which enable the implement to be stopped and started again at the furrow ends with the least possible loss of time. In this case a wrought-iron tube takes the place of the chain, anchored at both ends along the headland, as used formerly. The three-furrow plough made a bit of superb work; indeed we never saw better by steam, and the two-way cultivator broke up the land very steadily and thoroughly. In connexion with this implement, it must be observed that a ridging body accompanied by a subsoiling tine is used for trenching up the land before winter.

The third set of tackle shown in operation was that of

Messrs. Tasker, of Andover. They made tolerably good work with a Fowler plough fitted with digging breasts. This was driven by a Clayton and Shuttleworth's double-cylinder 12-horse power engine; the windlass, a stationary one, consisting of two winding drums with a central driving sheave, and a mechanism so contrived that while the engine is running at full speed the motion of the sheave can be checked or reversed. It possesses the further advantage of stopping of its own accord when the implement comes in contact with a rock or a root.

The horse-ploughs made some good work on Tuesday, the more particularly Howards' and Ransomes'. Furris of Exeter and Ball of Northampton were working, but with less merit, together with Eddy of Exeter, who showed a pulverizing double-action turnwrest or one-way plough. It inverted the surface with a shallow furrow, upon which it threw one deeper, turned up by a second share. The seed-bed thus made is very good, though it would seem advisable to procure the same effect rather by steam than by horse power. This plough would be wholly inadmissible were the land full of couch-grass. Ransome's deep-culture plough, which created a good deal of sensation during the last plough trials of the Royal, also got to work.

The mowing machines, during the rain of Tuesday, drew but a small company, though the area of grass-land that falls to hay this year must necessarily be extensive. The loss in cattle and the failure to supply the place by sheep will oblige men to mow what they cannot graze, and that they are not sufficiently despondent to break up. The orders have been very extensive, and all the principal makers have more than they can do to supply so unusual a demand.

The mowers were put in operation on a piece of mixed clover, where there were about 18 cwt. or 20 cwt. an acre, on Tuesday, and on some meadow-grass on Wednesday. The surface of the former was smooth, and offered every advantage to the exhibitors, who went in and soon made a finish of the little plots allotted to them. During the two trials Wood of London, Hornsby of Grantham, Samuelson of Banbury, Pickslcy and Sims of Manchester, Bamlet of Thirsk, Brigham and Bickerton of Berwick-upon-Tweed, and Barber of Liverpool, put their mowers through their paces apparently to their own entire satisfaction, save in two cases. Not being properly provided for the work, as using reaping instead of mowing knives, or something of that sort Picksley and Sims and Brigham and Co. failed to work well: the rest cut splendidly, Wood's Plymouth prize machine taking the lead in point of quality, closely followed by Hornsby. In fact, it was the Plymouth award over again of Wood first and Hornsby second, while it is worthy of note that the outside model of many of the mowers is becoming a mere copy of Wood's notion, in itself a pretty good testimonial. Bamlett, Barber, and Samuelson ranked next, in the order their names are given.

On Wednesday sixteen reapers were moved out to mow eleven acres of light-standing rye, which had been previously set out by the Beverley Company's propelled machine. They soon walked through the plots assigned to them; for there was nothing save the absence of stuff to prove an impediment to any one of them. The attendance was much larger than on the day previous, the weather being fine, and the crop was in good order for the knives. Still here, as everywhere else throughout these field-operations, there was lacking the spirit and excitement and inquiry that always characterise one of the Royal-prize competitive trials, faulty though they may be. It is said that the prize-system is not needed in other branches of industry; that the woollen and cotton trades require no artificial stimulus. We do not deny that those, and other branches of trade have flourished without a prize-system, but we may use the argument of Mr. Lowe in reference to representation which, he said, however faulty it might appear, considered abstractedly, must be correct in fact, because its results were so good. So has the prize-system done good service.

But to return to the reapers: Messrs. Hornsby showed their three machines—the self-delivery machine, the semi-manual, and the two-horse back-delivery machine. The former, which received the first prize at Plymouth, delivers in swathe at one side. This is effected by three endless chains set with steel forks, travelling on a slanting platform, at the end of which are placed pulleys in a diagonal position. The swathe was well laid and clear of the horse track, and there is a simple mode of adjusting the height of cut by means of a toothed quadrant, and the driving-crank; for, being globular, the motion of the bar is singularly free. Much has lately been said in favour of the sheafing-machine, but the remarks to be found in the report following the Plymouth meeting are very pertinent: "The comparative advantage of a swathe or sheaf delivery is a question that will greatly depend upon the condition of the crop. Tying is easier from a *well-laid* sheaf; but where, as in the case of oats, or barley with seeds, the crops requiring to lie for some time, the swathe, as delivered by such machine, certainly delivers the grain in a preferable condition for drying, and less likely to be injured by rain than when in sheaf." The performance was certainly very good, if more interest was created by the semi-manual machine, of which the Royal report says: "In districts where the crops are, as a rule, heavy and laid, manual machines, are difficult to work, and self-acting machines, as hitherto constructed, cannot be adapted to the variation of the crop; this combination of Hornsby's meets the difficulty. We can only say that, in the trials at Plymouth, this machine distanced all comptitors, and was very much admired by the public. It may be best described as a combination of the grated drop-sheaf delivery platform (Hornsby's own patent), with the steel-forked endless chains already described. The workman pressing a treadle raises the grated platform to receive the corn; when sufficient is cut he allows the platform to drop; the endless chains travelling in an oblique direction enter between the slats of the platform, and carry off the sheaf to the side, whilst the man is collecting a fresh portion of the crop. The raker can regulate the size of the sheaves, and does his work with comparative ease. The gearing and cutting parts are precisely similar to No. 1901 (swathe) already described." One was struck with the leisurely pace of the horses while doing this work. Some of the drivers put on a great spurt, which could not be maintained, as though they were anxious to scramble through, and get off as soon as possible, to avoid a break-down. The work was exceedingly well done, as may be said of that effected by the back-delivery machine furnished with an open-slatted tipping platform working with a hinge.

Samuelson did not go into the rye with the revolving rake, but with a manual-delivery prize "Eclipse" machine, which sheafed and cut the crop admirably. It is a one-horse machine, cut four feet six, light in draught and price, but well put together. Burrows' manual delivery showed fair work, and Barber's "Eagle" made many friends, its lightness and quick action standing it in good stead. The finger-bar adapts itself well to uneven surfaces, and is well under the command of the driver, but it is in front of the machine, which is not in its favour. There is a rack and catch on the rising lever, to hold the main shoe to any desired angle, which removes the sliding friction of the finger-bar from the ground to the wheels. There was no means of testing the draught. Two light well-accustomed nags were harnessed to it, and walked away at anything but agricultura pace.

Brigham and Bickerton's two machines delivered fairly: one, the "Excelsior," self-delivery; the other a combined reaping and mowing machine, which seemed to have got hold of the right knife at last. The bearings were in brass, and the driver's seat on springs. Bamlet, of Thirsk, also put a two-horse reaper and a combined machine, well and simply made, delivering the sheaf by hand. The machine is steady at work, and the driver appears to have it well in hand. Another machine that showed to advantage was that exhibited by the Beverley Company, and propelled by three horses. It knocked down a lot of work, the cut being eight full feet, and it laid the swathe with much regularity. For wold and heath farms, that is to say, for farms having large areas of even land, this machine is particularly adapted, and it possesses the recommendation that the delivery of swathe is either to the right or the left, as the operator may desire. It is said that by a slight change in the position of the wheels, the reaper is adapted for the small lands of Essex, the machine travelling of course in the same direction as the furrows. The pace at which the horses go is not distressing; and as to the numbers, if that be not fully compensated by the increased work done, it must be remembered that horses are so employed just at a time when there is nothing else for them to do. Several minor alterations have been made. A pitch chain has been substituted for the belt, and this chain is capable of being instantaneously tightened by the eccentric. The spindle which conveys motion to the knife is case-hardened and runs in steel bushes. There is an arrangement by which the low cut as well as the high can be obtained, and this is of importance, as many men still attach a high value to game cover. Maunder, of Ottery, Devon, hands in a good list of testimonials from farmers who have tried his simple machine, which certainly worked very well indeed. It is a single-horse, and two or three of the testimonials speak of its "having cut fourteen or fifteen acres a day without changing." Young, of Ayr, made some good work also with a manual-delivery machine, of strong build and cheap. Burrows, formerly Burrows and Page, put in a light two-horse machine, with five-feet cut, from Morchard Bishop, Devon, which made a fair figure. The finger-bar and fingers are of steel. A similar machine was shown by Robert Page, of the same town. A two-horse back or side-delivery reaper from St. German's, Cornwall, was put in, and laid low its quota of the rye-crop in fair style. The sheaf collects itself on a cylinder, or conical roller, in rear of the platform, and when in sufficient quantity, the rake-man presses a treadle with his heel, which gives motion to the cone and delivers the sheaf. A side-delivery is also devised for the same machine, but we did not see it in work. Many of these "Manuals" are combined machines, in which there is little to choose. They are generally substantially made, and well put together.

From this spot it was but a walk of a couple of minutes to where the grass mowers were at work on a meadow bearing a crop of about 1¼ tons per acre. Most of the machines there went from the rye with a single change of knife and platform. Running down the centre of the field was an empty ditch, grown over with sward, about 2 feet deep and 3 feet wide at top, which gave the machines some trouble. Wood's prize mower performed, as already intimated, famously, leaving a good horse-way; and the "Eagle," Hornsby's, Bamlet's, and Young's machines, all went in, and made very satisfactory performances, the general voice being in favour of Wood, Hornsby, and Barber.

When the mowers had concluded, the hay tedders were set in motion. The Reading Iron Works produced a well-made and cheap double-action solid crank axle machine, with which the work done was creditable. This solid axle appears to give great strength to the tedder, and the arrangements are very simple and clever. Ashby and Jeffery, of Stamford, put two machines in motion of the old construction, but somewhat too slight in make. Nicholson's well-known and well-made tedder quite sustained its reputation in backward and forward action; and the Howards, of Bedford, and Boby, of Bury St. Edmunds, were well up to their previous doings in this way, the public award going for Nicholson first, Howard second, and Boby third. It is noticeable that Burgess and Key put nothing whatever to work at Salisbury, although, after the Plymouth awards, one would have thought this house could not now afford to hold off. It is good to see men still keeping their places before the public. There were some drills shown in work, and notably, Sainty's spring lever, which created a great deal of sensation at Plymouth. A few horse hoes also got to work in a bit of ridged turnips left for them, but little of any importance was done owing to the rain.

THE NOVELTIES ON THE SHOW GROUND.

The novelties among the implement stands are very few, but the number of steam engines at work must beat the Newcastle display, for upwards of 50 could be counted. Amongst these are discoverable some few changes and improvements in detail, such as Ingram and Phillips, of Fordingbridge, whose cylinder-front, cover, and jacket are in one casting, the only joints being the bottom and jacket-cover; while the arrangement of the safety-valves is novel, an equilibrium slide-valve being employed. Woods and Cocksedge, of Stowmarket, created some movement by a circular pig trough, which found a great many purchasers. This does seem to provide that no pig shall have more than his share, and shall get no more than his snout into his plate, and the cells are well contrived. Messrs. Howard exhibited a mould plough for steam tillage, and a ridge harrow of wonderful versatility. The harrow seems to have no more idea of bones and impossibilities of position than a harlequin. Holmes and Sons had a novelty, in the adoption of a metal spring lever to the drill in place of wooden lever with hinge. In this particular, Hawkes and Spencer have produced perhaps the greatest novelty, and one that is really likely to be of use. In place of the revolving barrels with cups, the drill they have invented has a seed-box, which takes the form at bottom of a series of compartments, through each of which passes at right angles to the section of the drill a chain, the links being constructed so as to bear with them the seeds, which fall over the little pulleys carrying the chains into the tins. It is clear that, all other things being equal, there is an advantage in this contrivance, for a drill so furnished will deposit seed with regularity whatever may be its position. Probably more will be heard of this contrivance. Amongst the few other novelties must be classed a bit of mechanism that has found its way into hair-dressers' apartments, but has not yet obtained a footing where Messrs. Tasker, of Andover, seem anxious to introduce it into the stable. This is the revolving brush, which has thus been adapted for stable use. Some grooms are lazy enough already in all conscience, but the contrivance may be used here and there. The pea-sheller on Lyons' stand is a capital thing. It does the work expeditiously and thoroughly, and without waste, and is nothing more than a minute wringer. The first nip between the rollers opens the pod, and the peas slip out as the shell is drawn in. A peck of peas is thus shelled in six or seven minutes. For large establishments and hotels, it is an admirable labour-saving contrivance, and will meet with a ready sale. Amies and Barford have further improved the American mill, which with spirited action they have rescued from oblivion and failure, and placed in the very first rank amongst such machines. It is wonderful the work it will do, not only as to quantity, but as to variety. In quick succession it receives wheat, maize, barley, linseed, beans, and furnishes meals of different degrees of fineness. The concave which encloses the cone is made, by levers commanded by a screw, to advance and recede with the greatest precision and ease.

The general management of the Implement Stands was very good, but business as usual very bad; and until the Bath and West of England comes back to the prize system there can be no improvement in this way.

THE IMPLEMENT STANDS.

Tasker and Sons, Andover.—Three horse power portable steam engine, for small occupations; four, six, and eight horse power portable single cylinder steam engines; ten horse power double cylinder portable steam engine; single and treble blast patent combined portable finishing and thrashing machines, to be worked by steam and horse power; two and four horse power portable thrashing machines; twelve horse power traction engine; windlass for steam cultivation, and wrought iron cultivator for steam power; Hayes's patent straw elevator; steam power grinding and American grist mills, also for bruising and crushing barley, oats, malt, rape, linseed cake, and splitting beans or peas; chaff cutting machines for horse, water, or steam power; screw lifting jacks, in two sizes; shepherd's house, or portable granary, made of corrugated galvanized iron, on a strong carriage; iron one and two wheel and other ploughs in great variety; sets of trussed frame, drag, and trussed beam harrows; scarifiers; drills for general purposes; fifteen and thirteen coulter corn drills without manure; nine row small occupation and turnip and manure drills; broadcast sowing machines for corn, seed, and grass; galvanized iron pump, on portable iron stand; parallel steerage expanding and one row horse hoes; haymaking and winnowing machines; barley horner and self cleaning corn screens; hand and horse power chaffcutters; galvanized iron water and other troughs, for sheep, hogs, pigs, horses, and cattle; wrought iron sack barrow and sack holders; lawn mower, garden and field rollers, and land pressers; corn elevators, iron water and liquid manure carts and garden chairs, and set of well machinery for drawing water.

Hornsby and Sons, Grantham.—Eight horse power portable steam engine, adapted for any description of agricultural or manufacturing work; 4½ feet combined thrashing, shaking, and finishing dressing machine; swathe self delivery, new semi-manual side sheaf delivery, and one horse back delivery reapers; mowers and combined mowers and reapers; ten row corn and seed drill; disc turnip cutters and pulpers; an assortment of the Champion ploughs and moulding plough; an assortment of washing, wringing, and mangling machines, and an improved mangle.

Marshall, Sons, and Co., Gainsborough.—Five, eight, and nine horse power portable steam engines; combined thrashing and finishing dressing machines, and circular saw benches.

The Reading Iron Works (Limited), Reading.—Three, six, and eight horse power portable steam engines; four horse power horizontal fixed engine; 42 and 54 inch portable steam power thrashing machines; portable thrashing machine, with horse gear; grinding mills for horse and steam power; double and single action solid crank axle hay machine (new implement), intended to follow the mowing machine, to turn the grass as it is cut; circular saw bench; horse rakes; grain crushing and oilcake mills; horse gear for one or two horses; patent roller and clodcrusher (new implement), light in draught, and intended to equalize the pressure upon the land; chaffcutters for hand, horse, steam, or water power; barley horner; grass seed broadcast sowing machine, and combined sack cart and holder.

Clayton, Shuttleworth, and Co., Lincoln.—Six and eight horse power single cylinder portable steam engines; ten horse power double cylinder steam traction engine; combined portable double blast thrashing and complete finishing and chaff elevating machines, and portable straw elevator.

Humphries, Edward, Pershore.—Seven horse power portable steam engine, and portable combined thrashing, shaking, riddling, barley horning, winnowing, and sacking machine.

Gibbons, P. and H. P., Wantage, Berkshire.—Four-and-a-half and seven horse power portable steam engines, and portable combined thrashing machines.

Holmes and Son, Norwich.—Seven horse power portable steam engine; combined portable thrashing machine; circular-saw table, with 36 inch cast steel saw; an assortment of corn, seed, turnip, and manure drills, suited for all descriptions of land; Everett's rotary harrow or forking machine; corn dressing machine, barley hummeller, and portable clover seed sheller.

Wallis, Haslam, and Steevens, Basingstoke.—Three-and-a-half and eight horse power portable steam engines; two and four horse power portable thrashing machines; combined thrashing machines; twenty feet angular delivery straw elevator; corn blowing, winnowing, and dressing machines; sack holders; oilcake crusher; spring hanger for suspending the vibrating parts of thrashing machines; a series of one and two wheel ploughs, adapted for every description of work; a varied assortment of drags, harrows, and drills; clodcrushers and land pressers; corn, turnip, and manure drills; horse hoe, scarifiers, machines for drilling holes in metals, garden seats, and wood sack truck.

Powis, Charles, London.—Mortising, tenoning, and boring machines; band sawing machine; "joiners' universal" machine and saw bench, and self acting circular-saw bench.

Riches and Watts, Norwich.—Eight-horse power portable steam-engine, and an assortment of the new "Eureka" and "American" grist mills.

Picksley, Sims, and Co., Leigh, Lancashire.—Three-horse power vertical steam-engines; horse-power bone-mills; steam, horse, or water-power oat, bean, and Indian corn crushers and mills; an assortment of chaff-cutters for hand and power; oilcake mills, turnip-cutters, pulpers, and slicers; two-horse reapers (new implement), fitted with patent corrugated steel knife-bar; two-horse reaping and mowing machines; one-horse gear; a selection of wringing machines, garden-rollers, hand drag-rakes, pig-troughs, garden-chairs and tables, manure and hayforks, and cattle-troughs.

Brown and May, Devizes.—Two-and-a-half, four, and eight-horse power portable steam-engines; eight-horse power traction engine, for ploughing, thrashing, and sawing; and two combined thrashing machines.

Ruston, Proctor, and Co., Lincoln.—Six, eight, and ten-horse power portable steam-engines; improved thrashing, dressing, and finishing machines; circular-saw benches in two sizes; improved flour mill; and double-delivery centrifugal pump.

Maynard, R., Whittlesford.—Six-horse portable steam-engine; portable sifting chaff engine, with spare riddle, knife-wheel, and an instrument for expeditiously changing the knife-wheels.

Ransomes and Sims, Ipswich. — Eight-horse portable steam-engine; A1 steam thrashing machine, 90-gallon iron water pan; light iron one-horse, light and heavy two and three-horse general purpose, two-wheel iron and wood beam furrow, ridging, subsoil, and hoe ploughs; subsoil, ridging, and potato-bodies; sets of trussed iron whippletrees, pomeltrees, and three-jointed harrows; hand power mills for beans, oats, and oilcake; self-cleaning adjustable rotary corn screen; bean cutter; bruising mill for malt, oats, linseed, &c.; oilcake breaker, turnip cutters, root pulper, two-horse gear fitted with intermediate motion; fourteen, sixteen, eighteen, and twenty inch lawn mowers; sets of pig and hog troughs, iron water-pans to hold various quantities, hand-power chaff-engines, and patent steel-teeth balance horse-rake.

Barrows and Carmichael, Banbury. — Eight-horse power portable steam-engine; full-sized combined thrashing and winnowing machine; and American grist mill on four wheels.

Robey and Co. (Limited), Lincoln.—Improved portable single cylinder steam-engine, and portable combined treble-blast thrashing, shaking, and dressing machine.

Plenty, Newbury.—Eight-horse power portable steam-engine, 54-inch combined thrashing and dressing machine; galvanized shepherd's house, or portable granary; wrought iron water or liquid manure cart; galvanized iron sheep and cattle troughs of various lengths; sets of three Berkshire harrows, and broadcast seed machine.

Holman, London.—Set of farmer's oil-pressing apparatus (new implement), designed to become available to growers of oil-producing seeds; powerful hydraulic punching bear, lifting jacks and crabs of various tonnage, sets of differential pulley blocks, two-and-a-half and four-horse power portable and fixed common pumping engines; common, double-action, force and house pumps; powerful farm fire engine, and 4-inch Britannia pump on carriage.

Wilkins, Ipswich.—Six-horse portable steam-engine, and combined corn grinding mill and chaff cutter.

Ashby and Jeffrey, Stamford.—Six-horse portable steam-engine; combined thrashing and hummelling machine; 30-inch improved stone grinding mill; one-horse gear work for driving chaff cutters or crushing mills, thirteen-inch three-knife safety chaff cutting machine; double-action haymaking machines of various strengths, balance-lever and wheel hand and horse-rakes, two-knife chaff cutters of various sizes for hand power, disc root pulpers, rotating and chain harrows, and patent steel shields for protecting cranks of thrashing machines.

Parfitt, Barnard, and Harvey, Devizes.—Three-and-a-half-horse power portable steam-engine, one-horse power semi-portable vertical steam-engine, three-and-a-half-horse power portable combined thrashing machine; soda water machine (new implement), containing all the parts usually made into five distinct machines, viz., gasometer, gas generator, pump, and agitator, bottling machine, and lying down press; large-sized portable chaff cutter, and newly invented screw-jack to lift two tons.

Andrews, Melksham.—Three-and-a-half-horse power portable steam-engine; an assortment of new chaff machines, of different sizes, fitted with two and three convex knives, to be worked by horse or steam power; new compound action mill, to do every kind of crushing and grinding required on the farm; new meat chopping machine on iron frame, one-horse gear work, new horse-rake with iron teeth, double-action haymaking machine, double-lever cheese-press, cheese making apparatus, improved curd mill, oval milk strainer, and medium-sized round milk or whey strainer.

Ingram and Phillips, Fordingbridge.—Eight-horse power portable steam-engine, and ten-horse power horizontal steam-engine.

Fox, Walker, and Co., Bristol.—Six-horse power portable engine, and ten-horse power horizontal engine.

Fowler and Co., Leeds and London. — Eight-horse power set of steam-ploughing machinery, with plough, anchors, rope-porters, and steel rope complete; and a five tined cultivator.

Hundley, Bourton.—Five-horse power portable steam-engine, eight-horse power horizontal fixed steam-engine, five-horse power finishing thrashing machine; cider press, apple mill, two sizes of horse gear with three and four feet horse wheel, chaff cutters for different lengths, single and double cheese presses, one and two wheel iron ploughs, set of harrows for general purposes, wrought iron cultivator, and smut machine.

Underhill, Newport, Salop. — Six horse power portable steam engne, six horse power traction engine; six horse power treble blast portable finishing, thrashing, and dressing machine, elevator, barley horner, and wheat cleaner; five, seven, and nine tined cultivators; ridging plough, sets of Bedford and chain harrows, balance-ball horse rake, barrow, and two furrow turnip drills, a bundle of gapping drills; grubber, horse hoe, sheep rack on wheels, sheep trough, cow crib, cattle trough, cheese press; specimens of poultry and game fence, hand cart for farm or garden, and patent chain drill.

Amies, Barford, and Co., Peterborough.—Eight horse power portable steam engine, American grinding mills on high and low stands for horse or steam power, line of shafting for driving machinery, two sizes of portable farmers' steaming apparatus for feeding purposes, oilcake mills for hand, horse, or steam power. An assortment of wrought and cast iron water-ballasting and cylinder garden rollers of various diameter and strength, suitable for parks, cricket grounds, new roads, &c.; and a set of improved outfall pipes for land drainage.

The West of England Engineering and Coker Canvas Company (Limited), Martock.—Two and a half horse power portable steam engine, scutching machine, flax breaking and flax seeding machines, contractors' dust and stone carts, and two pairs of patent wheels.

Turner, E. R. and F., Ipswich.—Four and seven horse power portable steam engines, combined thrashing and dressing machines, combined mills for crushing or bruising linseed, oats, malt, and barley in different sizes for horse and steam power, portable American grist and grinding mills, and oilcake breakers.

Garrett and Sons, Saxmundham.—Three and eight horse power portable steam engines, improved thrashing, dressing, and finishing machines; seed, manure, and light occupation corn drills; improved manure distributors, and improved single-blast thrashing and rough dressing machine.

Aveling and Porter, Rochester.—Eight and ten horse power locomotive engines for agricultural purposes, and set of travelling rope porters for steam cultivation.

Tuxford and Sons, Boston.—Ten horse power portable steeple engine with two vertical cylinders, ten horse power improved horizontal portable steam engine, three horse power improved portable steam engine, combined treble blast thrashing, shaking, dressing, and finishing machine. Patent straw elevator (new implement), which can be attached to a thrashing machine and made ready for working in five minutes; Appold's improved centrifugal pump, and a circular-saw table.

Howard, J. and F., Bedford.—Pair of fourteen horse ploughing and traction engines for steam cultivation; set of steam cultivating and ploughing apparatus; three furrow double action steam plough; combined steam ridging and subsoil plough, set of new steam harrows, mole draining plough for steam power; Bulstrode's snatch-block sling, an addition to the steam cultivating apparatus worked by a stationary engine; improved iron water cart for the supply of engines used in steam cultivation; improved traction truck, to carry 5 tons; iron dwarf, general purpose, heavy iron swing, iron subsoil, double breast or ridging, and potato raising ploughs; dynamometer or draught gauge for ploughs; ridging and subsoil bodies; turnip harrow (new implement), to clean two rows of turnips at once, work close up to the growing plants, cut off the weeds, and check the ravages of the fly; sets of patent flexible two, three, and four-beam handled drag harrows; wrought iron harrow carriage; iron horse rakes, and double action haymaking machines.

Samuelson and Co., Britannia Works, Banbury.—Self raking and one horse "Eclipse" reaping machines; combined reaper and mower; grass and lawn mowing machines; chaff cutters, and combined chaff cutter and corn bruisers; single and double action turnip cutters, root pulpers, and double action haymaking machine.

Baker, Thomas, Compton, Newbury.—Cylindrical water carts, made of wrought iron, to be drawn by horse or pony, and portable liquid manure cart on wooden wheels, which can be converted into a water cart.

Coleman and Morton, Chelmsford.—Assorted five and seven tined cultivators, for light and heavy land; Hanson's potato digger; two horse gear with intermediate motion for thrashing, grinding, chaff cutting, and similar purposes; water cart with wrought iron body for general use, but specially adapted for service in steam cultivation; self adjusting rope porter, and samples of shares of different patterns and sizes suitable for the cultivators.

Wightman and Denning, Chard.—Haymaking machines, with and without rising action; horse rake; corn and pulse bruisers for either hand or power; apple mill and corn bruiser; sets of pony and one or two horse gear, ploughs for light and heavy land, root grater, horse hoe, and flax-breaking machine adapted for hand power.

Silvester, London.—An assortment of weighing machines or scales, suitable for sheep or pigs, dead or alive, hay, straw, or other farm produce; an improved nose ring; machine for sharpening hay knives, sickles, brush hooks, &c.; combined washing, wringing, and mangling machine; and three-motion 26-gallon churn.

Dodge, London.—An assortment of Indiarubber vulcanized machine band, hose, tubing, suction hose, double texture waterproof covers, water buckets, deckle straps, ditching and other boots, driving aprons, capes, and coats.

Brigham and Bickerton, Berwick-on-Tweed. — The "Excelsior" self-delivery reaping machine; and the "Buckey Junior" combined reaping and mowing machine.

Bryan Corcoran and Co., London. — An assortment of French runner and bed mill stones; smut or wheat-cleaning machine; case of samples or specimens of woven wire for dressing flour and other articles connected with the paper, corn, flour, and malting trades; chrondrometer, for ascertaining the weight of corn and seed per bushel; and a series of useful sundries.

Freeman and Hardon, Manchester.—The Royal patent cake, a compound of fruit and seed; and the original condimented food, a concentrated compound.

Gardiner, Gloucester.—A selection of French runner mill and bed stones; mahogany and oak millstone staffs and bill handles, cast-steel mill bills, and an assortment of machine wire and brushes.

Priest and Woolnough, Kingston-on-Thames.—Lever corn drills for different widths, and drills for turnips and manure on the flat and ridge; manure distributor for damp or dry manure; grass seed drill for horse power; and lever and light land horse hoes for general purposes.

Carson and Toone, Warminster.—An assortment of chaff-cutting engines for steam, horse, and hand power; improved turnip cutters, oilcake crushers, wrought iron horse hoes, single and double cheese presses, safety horse gear mounted on wood and iron wheels, wheel rollers and clod crushers, iron field and garden rollers, three-share scarifier, wrought iron and wood ploughs, wood and iron sack trucks, and jointed self-expanding chain harrows.

Milford and Son, Cullompton.—One and two horse carts, improved spring pleasure or market dog cart, two horse and pair horse plank side waggons and improved lifting jack.

Patterson and Co. (Limited), Beverley.—Three sizes of farmers' mill, suitable for bruising, splitting, and grinding every kind of grain and pulse, linseed, cotton seed, &c.

Woods and Cocksedge, Stowmarket.—Three and four horse power vertical steam engines; portable corn grinding mills, with and without travelling frames and high wheels; universal roller and maltsters' crushing mills; single and double-action turnip cutters; improved root pulpers; oilcake breaker; one and two horse works, with separate and intermediate motion; a series of perfect pig troughs, in different sizes (new implements), made circular, with divided cups or compartments, so that each pig gets his own proper share; chaffcutters; one horse carts with jointed harvest frames; one horse reaping machine, and two horse grass mowers, with reaper attachment.

Fuller, S. and A., Bath.—New patent and fashionable carriages of various shapes.

Bamlett, Thirsk, York.—Two horse combined reaping and mowing machine, one horse reaping machine, and two horse grass mowing machine.

Reynolds, London.—A variety of useful and ornamental specimens in galvanized iron wirework, comprising rose temples, rosaries, garden archways, flower-pots, stands, suspending baskets, garden bordering, &c.; wrought iron dahlia and rose rods, iron garden chairs, rolls of improved poultry and aviary fence, and specimens of galvanized lattice-work.

The Beverley Iron and Waggon Co., Beverley.—Two and three-horse reaping-machines, with double self-acting swathe delivery, made to pass through almost any gateway, and commence cutting without having a path prepared; model, harvest, and light spring or market one-horse carts, of various strengths, to carry from 15 to 30 cwt.; liquid-manure distributor or water cart; portable pump, for liquid manure or water; pair-horse waggon to carry three tons, and several pair of patent cart and waggon wheels, with axle, to carry from twenty cwt. to three tons.

Boby, Bury St. Edmunds.—Improved corn-dressing machines; self-cleaning corn screens, with and without blower; double-action haymaking machines, with (new implement) one suitable for small occupations; barley aveller; broken-barley extractor (new implement), invented for the purpose of saving the large quantity of barley that is sacrificed for grinding purposes, in consequence of the kernels being broken by the thrashing-machine; and improved malt and lime or gravel screens.

Reeves, R. and J., Westbury.—Three, four, and five-row liquid-manure and seed drills; seven-row patent manure and corn drill; six, seven, and thirteen-coulter lever and small-occupation corn drills; improved broadcast corn and manure distributors; single-row and steerage horse hoes; one and two-wheel iron ploughs; sets of tubular whippletrees; steel-tooth horserake, water-cart, portable barrow-pump, safety horse-gear, chaffcutters, new corn screen, thistle destroyer, and model and samples of rick cloths, sacks, &c.

Baker, Wisbeach.—Six combined blowing and dressing-machines, for cleaning all kinds of grain and seeds for market.

Woods, London.—Two grass-mowing machines, simple in construction and of light draught; grass-mower, with reaping attachment (new implement), so constructed as to be easily changed from a mower to a reaper, to cut any kind of grass or grain; two one-horse reaping machines; and revolving, self-raking, side-delivery reaping machines.

Fry, A. and T., Bristol.—Several improved agricultural, harvest, farm, light crank-axle, and water carts; one and two-horse reaping and combined reaping and mowing machines; American horserakes, steel-tooth hay-collector, grass-seed and manure drills, sheep rack, and apple mill.

Day, Son, and Hewitt, London. — Stock-breeder's medicine-chest, chest of "chemical extract," chest of "gaseous fluid," chest of "red drench or inflammation-powders," chest of "red paste or condition balls" for horses; and copies of three pamphlets on "Key to Farriery," "Rearing of Calves," and "Breeding and Management of Sheep."

Kittmer, Lincoln. — Two combined corn-dressing and blowing-machines.

Purrett, Weston-super-Mare. — Sample-bottles of improved cider-colouring and prime champagne cider, and an improved bottle-corking machine.

Wilton and Sons, Salisbury.—Lawn-mowing machines of various widths, suitable for use by ladies, boys, or men; garden rollers, of different widths; an assortment of cast and wrought-iron bronzed and galvanized garden seats, chairs, vases, stools, &c.; assortment of galvanized wire game, sheep, poultry, lattice, and croquet netting; garden-engines and water-barrows; assortment of india-rubber hose and tubing, taps, syringes, hydropults, cast-steel forks, fern trowels, fumigators, water-pots, cut-flower stands, botanical cases, &c.; Spratt's galvanic-battery lightning-conductor; sausage, mincing, and coffee mills; rotary egg-beaters, knife-and-fork cleaners, box churns, carpet cleaners, portable refrigerator, ice-chests and freezing-machines, galvanized stable furniture, chaff-cutting machines, bean and oat mills, iron pumps, weighing-machines, galvanized and wrought-iron domestic cisterns, sheep and cattle troughs, cheese-presses, and dairy-utensils; a large variety of stoves, grates, and kitchen cooking-apparatus; and several double fire-resisting chambered boxes and hold-fast safes.

Roberts and Sons, Bridgewater.—A numerous selection of "economist" waggonettes, two and four-wheel dog-carts, Malvern and Whitechapel dog-carts, a gadabout, a Dennet gig, and miscellaneous lots of single and double harness, waterproof wrappers, whips, &c.

Rowland, Salisbury.—Mash tun and patent mashing machine; slotting and shaping machine, drilling and boring machine; circular-saw table and saw, mangle and wringing machine, and improved compound action mills.

Bentall, Maldon, Essex.—Improved chaff cutters, for different lengths; root pulpers, turnip cutters, for sheep and cattle; oatcake mills, oat and bean kibblers, two-horse gear and intermediate motion, single ridge hoe, light iron broadshare, and broadshare cultivator, and subsoil plough.

Milford, Thorverton, Devon.—Improved plankside pair-horse waggon and one-horse cart.

Young, J. and T., Ayr.—Two-horse power double driving wheel combined reaping and mowing machine, one-horse power combined reaping and mowing machine, double drills, turnip and mangold sowing machine, double and single cheese press, and improved curd mill.

Lyon, London.—Machine for shelling green peas and broad beans, machines for cutting and mincing meat, fish, vegetables, and poultry, making sausages, cutting carrots, and mincing food for hounds; pulping steamed roots for feeding pigs, &c.; chopping knives and cutting boards of various sizes, for suet, bread, and tobacco; improved knife sharpener, and knives for slicing vegetables and apples.

Hawkes and Spencer, Tiverton.—Improved pulverizing and general purpose ploughs, horse hoe, eleven and thirteen-coulter chain and corn drills "Eclipse," and sheaf back delivery one-horse reaping machines, and improved hay-making machine.

Wyatt, Salisbury.—Waggon and cart, designed for agricultural purposes and contractors' work.

Spong and Co., London.—Sausage and general mincing machine, and kitchen knife and saw combined.

The India Rubber Gutta Percha Co., London.—Vulcanized India-rubber sheets, belting, hose, tubing, speaking pipes, mats, taps, and gutta percha for machinery.

Piggot Brothers, London.—An assortment of rick cloths and hay sheets, of various dimensions ; the "Elcho shoot-screen" for volunteer corps, eight feet square tent ; six water-proof louver cloths of different colours ; and samples of cart grease.

Simpson and Son, Melksham.—Cheese platform, cheese making apparatus, curd mill, oval and round milk and whey strainers and coolers, milk pails and pans, milk warmers, cream tins, and cheese bowls.

Clay, Stennard Works, Yorkshire.—Improved cultivators, eradicators, and grubbers, horse hoes, and chain harrows.

Nicholson, Newark.—Improved haymaking machines, horse rakes, and oilcake crushers ; 24-inch garden roller, sack lifter, and weighing machine combined ; twelve-dozen wine rack, and an assortment of tin, corn, and malt shovels.

Kendell, J. and T. H., Blandford, Dorset.—Four and two-horse waggons, one-horse and pony cart ; corn, turnip, and mangold drills ; iron ploughs ; two-wheel land presser, steerage horse hoe, and turnip thinner ; sets of common-shaped, zig-zag, and chain harrows ; barley hummeller, sack trucks, water, feeding, and hog troughs, and winnowing machine.

Smith, Kettering.—Improved steerage patent and one-row horse hoes, five-tined grubber and horse hoe, and double blast winnowing and blowing machines.

Huxtable, Ottery St. Mary.—Haymaking machine (new implement), for working on uneven land and watered meadows ; improved horse rake, and light two-horse reaping machine.

Sawney, Beverley.—Combined winnowing and blowing machines, and improved winnower for small occupations.

Cambridge and Co., Bristol.—Combined press wheel rollers and clod crushers, with different-sized wheels ; sets of jointed self-expanding and combined tine and chain harrows ; two-two-wheel land presser, portable two-horse gear and thrashing machine, sets of patent tine harrows, horse rakes, and chaff cutter.

Brown and Co., London.—Various sizes of the patent lawn mowing machines for 1866 (new implement), with cutters of different measurements, to be worked by pony, horse, or hand ; wrought iron hurdles for sheep and general purposes ; specimens of ornamental cast iron vases, round and flat continuous bar fence, garden seats and chairs, fountains, fencing wire, netting for poultry and game, and bronzed flower stands and garden tables.

Major, H. J. and C., Bridgewater.—An erection for exhibiting Sealy's patent treble channelled roofing, corrugated, and other ornamental and paving tiles.

Bradford and Co., London and Manchester.—Improved three-horse power vertical steam-engine ; patent "Vowel" washing, wringing, and mangling machine, combined and separate, in a variety of sizes and forms ; butter making machines and churns ; linen presses, laundry stove, portable boiler with steamer, and "Phœnix" cinder sifter.

Keynes and Co., Salisbury.—An assortment of brush turnery and brushes for household and other purposes ;, sparrow trap with feeding coop, knife and fork cleaner, a variety of fancy basket work, and selections of malt-kiln, cistern, and barn shovels, seedlips, measuring bushels, &c.

Garton and King, Exeter.—Specimens of farm-house, cottage, skeleton, and Cobbett stoves, grates, cooking apparatus, hot air ventilating stoves, &c. ; an assortment of garden and pleasure ground seats of different lengths and pattern ; loose box, stall, and stable furniture and fittings ; wrought and cast iron cylindrical, crescent, and segment boilers for hothouses and other buildings ; sheep and cattle wire fence, straining posts, wrought iron hurdles and gates, &c., in great variety.

James, Cheltenham.—Medal liquid manure distributor (new implement) ; improved liquid manure pumps and distributors, force pumps, water pumps, street water cart, gapping drills, tempering mills, washing, wringing, and clothes' drying machines, patent roller and clod crusher, and assortment of wrought iron cattle troughs, cisterns, and corn bins.

Lewis, Salisbury. — Waggonette, and park and pony phaetons.

Brown and Co., Bridgwater.—A collection of roofing, Roman, triple, garden, flooring, and malt kiln tiles ; draining and water pipes ; garden pots, vases, sea-kale and rhubarb pots, &c.

Barber and Co., Liverpool.—Two combined reaping and mowing machines, and a mowing machine for two horses.

Musgrave Brothers, Belfast.—Several full-sized horse stalls with patent fittings, with an assortment of stable furniture ; samples of improved cowhouse fittings ; patent iron piggeries ; slow combustion and conservatory stoves ; improved cattle troughs, saddle airers, self-supplying water brushes, and ornamental lamp pillar for gas.

Parham, Bath.—Specimen of strong six-wire, galvanized strand, round bar and flat bar continuous, and ornamental continuous fencing for cattle, sheep, lawns, and shrubberies, and general purposes ; an assortment of garden, field, and ornamental entrance gates, made of wrought iron ; an iron framed tent for archery and cricket grounds ; verandah in seven separate parcels ; lever garden waterer ; improved iron hurdles, wrought iron cattle crib, and iron stable and harness room fittings.

Richmond and Chandler, Manchester.—Chaff cutters of different measurement, adapted for hand, horse or steam power ; corn crushers in four sizes ; one and two-horse gears for driving small machines ; steaming apparatus ; root washers, sackholder, and bread-kneading machines adapted for bakers and others who require to make large quantities of bread.

Kiddle, Salisbury.—Three-horse Gloucestershire waggon, improved one-horse Scotch cart, light two-horse Kerry waggon, and improved one-horse cart, all adapted for agriculture and other work.

Green and Son, London and Dublin.—An assortment of patent lawn mowing, rolling, and collecting machines, of various strengths and sizes, to cut from 12 to 36 inches ; and patent garden rollers of different lengths.

Tuck and Son, Bath.—Three substantial open-fire kitchen ranges for domestic use ; improved harness room stove and boiler, and arch boiler ; lawn mowing machines ; wrought iron pig troughs ; garden archway made of galvanized wire work ; specimens of American "aërial," French spring, "Palmerston," and other garden chairs, seats, and tables ; garden engines, syringes, liquid manure pumps, strained wire and tubular iron fencing, tubular iron field gate, balustrade railing, and a cast iron stable or garden pump.

Brenton, Cornwall.—One or two-horse patent improved back or side delivery reaping machines ; improved registered sheep rack, excelsior turnwrist plough, and improved portable horserake.

Brimsmead, Torrington.—Two patent synchronical thrashing reed-making machines, for one and two-horse power ; and Child's patent self-exercising nursing chair (new implement), calculated to improve the growth of children and prevent deformity.

Leake, London.—Specimens of razor strops, knife and fork cleaners ; sword, plate, and grate polishers ; rose or aphis brush, sausage machine, carved bread plates, butter prints, paste rollers, and butter beaters, knives, and slicers.

Harris, Shaftesbury, Dorset.—General purpose and light land iron ploughs, chaff-cutters, and chain harrows.

Browne Brothers, Lyme Regis.—Open or closed cooking apparatus, improved steaming apparatus for cooking every description of food usually boiled ; kitchen ranges, machines for manufacturing ice and ice creams, wine coolers, refrigerators, portable ice-houses, cases of freezing compounds ; a patent advertiser and card distributor (new implement), a novel invention, by which persons can help themselves to prospectuses, &c., of the articles advertised without the attendance of advertisers ; and specimens of show cards for the patent advertiser.

Ball and Sons, Rothwell.—General purpose, light land, and ridging ploughs ; horse rake, improved iron scuffler with seven tines ; sets of iron diagonal and chain harrows ; light one-horse and strong two-horse carts for general purposes ; light two-horse waggons, and horse hoes with one and two wheels.

Wood, W., London.—Patent edge tool sharpeners, weighing machines, and magnetic hammers.

Milford, Kenn, Exeter. — Improved pair-horse tipping waggon (new implement) for general farm, road, and harvest purposes ; improved hay or harvest carts, and cart or carriage lifting jacks.

The St. Pancras Iron Works, London. — Full-sized models of stable, cow stall, stalls and loose boxes ; an assortment of wrought-iron and other stable fittings ; a collection of noiseless halter guide and chains, racking bolts, head stall plates, name plates, burnishes, brackets for harness, halter and rack chains, stable lanterns, saddle airers, corn bins, corn measures, stable ventilators, bit cases, &c.; wrought-iron economic hay-rack; iron piggery; specimen of Scott's patent glass walls; wrought and cast-iron posts, standards, and field gates; patent bar-iron sheep and cattle hurdles; wired hurdles and running fence; wrought-iron tree guards, carved-iron garden chair, and collection of standards for wire fencing.

Larkworthy and Co., Worcester.—An assortment of patent "Excelsior" one and two wheel swing, iron moulding or ridging ploughs, for light, heavy, and hill work; sets of duck-footed drag harrows; sets of three and four-beam "Excelsior" harrows; and sets of steel plough whippletrees.

The Canadian Washing Machine Company, Worcester.—Patent Canadian washing, wringing, and mangling machines, separate and combined; steam power washing machine; improved American churns, umbrella tent, clothes' dryer, clothes' horse, Indiarubber wringers, and compound lever and box mangles.

Day, Bridgwater.—Double roller apple mill, with stone rollers; haymaking machine, horse rakes, double and single cheese presses, galvanized iron curd mill, and screw lifting jack.

Cullingford, Stratford.—Sheep folding, garden, drag, rabbit, and bat-folding net, of various widths and mesh; and roll of galvanized iron wire netting.

Clarke and Son, Brackley.—Adjustable scythes (new implement) for light and heavy grass crops, and adjustable scythe for corn only.

Jones, Gloucester.—Composition for waterproofing, softening, and preserving leather of all kinds; and Gloucestershire specific for foot-rot in sheep.

Pierce, London.—Patent semicircular and rectangular wrought iron galvanized cattle and sheep troughs; hog and pig troughs; tubular wheelbarrows; hydropult; wrought iron tripod and force manure and general service pumps; wrought iron sack and tubular wheel pristine water barrows; "Excelsior" shepherd's house or granary, and "Excelsior" piggery or dog kennel; samples of tin shovels, galvanized buckets, turnip skips, dry measures, and cattle pans; round and square corn bins; patent screens, winnower, counterbalance horse rake, and solid beam harrows.

Tomlinson and Hayward, Lincoln.—Packets of butter-powder for improving the quality of butter, &c.; and patent castor-oil sheep ointment, for curing scab in sheep.

Maunder, Ottery St. Mary.—Two reaping machines, and a haymaking machine.

Marshall, Upton Pyne.—Two, and two or three horse waggon (new implement), with plank sides; one or two horse cart (new implement); and light cart (new implement) for one horse, and equal to one ton and a half.

Hutchings, Exmouth. — Specimens of light sociable, landau, waggonette, and Albert body four-wheel dog carts, for pair or single horse.

Hill and Smith, Brierley Hill.—Specimen lengths of patent continuous sheep and ox fence, light and strong; round and flat-bar ornamental wrought iron hurdles; wrought iron entrance and field gates, with cast iron piers and pillars; iron tree guards; rotary gravel screen on wheels; iron heating and wheel barrows; specimens of black varnish, and galvanized or painted game-proof wire netting; improved stall divisions for stables, and improved rack manger and water troughs.

Turner and Bishop, Leighton Buzzard.—Bedfordshire corn and seed drills, ten-row press lever; land press ditto for corn, turnip, and manure drills; grinding mills for horse and steam power, three and five tined cultivators, hand and horse power thrashing machines, gear work to drive thrashing machine or chaff cutters, small circular-saw bench, and oil-cake mills.

Greening and Co., Manchester. — An assortment of machine-made iron-wire horse, cattle, sheep, poultry, and game fence, plain and ornamental; galvanized hexagon and diamond pattern netting; sets of wrought-iron sheep and ornamental garden hurdles; wrought-iron palisading, farm and carriage gates, tree and plant guards, border-fences, &c.; iron garden lounges, chairs, stools, tables and vases; iron garden rollers, portable forge, terminal saddle, boiler, hen coops, garden engines, galvanised wire baskets for ferns and flowers, jet varnish, and roofing felt.

Kent, London.—Rotary knife-cleaning machines of various sizes, champion carpet sweepers, compound action churns, egg whisk and batter mixing machines, sausage machines and mincers, bread cutters, large and small filters, refrigerators, ice safes, clothes wringers, patent rotary cinder sifter and dust bin combined, washing machines, and a large assortment of small useful articles for domestic use.

Gliddon, Taunton.—Prize open fire kitchen ranges and steaming apparatus for large and small occupations, suspension roasting apparatus, heating stoves, enamelled iron bath, and double-action lift and force pump.

Johnston, London.—Variety of butter churns of different sizes, patent six-foot mangle, butter prints, knives, and beaters.

Weir, London. — Washing, wringing, and mangling machines, dressing room mangle with drawers, goffering and crimping machines, workman's and spirit draining levels, single and double action box and metallic churns; lactometer, milk syphon, and set of dairy utensils; mincing, bread-cutting, and fruit crushing machines; patent egg whisks and domestic wine presses.

Whitmee, London.—Chaff cutting machines; oat, bean, corn, and linseed crushers; corn grinding mills and corn mill stones; flour dressing machines, flour mills, sausage machines, and coffee mills.

Wade, London.—Hay fork, clothes wringer, and assortment of domestic articles.

Smith Brothers, Thrapstone.—Double-action haymakers, steel toothed horse-rake, steerage corn drills, and single and double grist, oilcake, and bean mills.

Spencer, London.—Patent roller and clod crusher, and lever corn drill.

Parnell, Exeter.—Sets of plated and brass gig and cart harness; side, hunting, and exercising saddles; waggon, cart, and horse covers; waterproof gig apron and neck cloths.

Newnham and Son, Bath.—"Bath Landau Waggonette," light "Segmental Brougham," "Tout-le-monde" phaeton, and pony, cob, and horse size "Sadabout."

Pennan, C. H. and S., Salisbury.—Specimens of ornamental iron and bronzed garden tables, chairs, vases, flower stands, and wire-work articles; patent kitcheners, knife cleaning machines, ranges and stoves, improved cottage mangle, garden rollers, fieldgates, lawn mowers, single and double cheese presses, weighing machines; cattle, sheep, dog, and poultry troughs; house and liquid manure pumps, galvanised roofing iron and wire, and numerous small articles for domestic use.

Eddy, Kenford.—Two-wheel light, heavy, general purpose double breast, turn wrest or one way, and pulverized single and double action iron ploughs; horse hoe for single row, for ridge or flat; horse rake with steel teeth; pair of four-beam iron drags; sets of light harrows, iron rotary machine, and grass seed drills.

Barnard, Bishop, and Barnard, Norwich.—Different sized noiseless lawn mowers; wrought iron folding, field, garden, and park chairs; and rolls of machine-made galvanized wire netting.

Cottam and Co., London.—Portable united cow fitting; samples of enamelled mangers and harness brackets; and model of a stable.

Vezey, R. and E., Bath.—Victoria cab phaeton, improved waggonette, and dog-cart phaeton.

Day and Sons, Shavington.—Flockmasters', dairy farmrrs', and miniature medicine chests; purified Driffield oil, black drink, and cow drencher.

Whitehead, Preston.—Hand and steam power drain pipe, tile, and brickmaking machines; double action brick pressing machines; and combined pugging and solid brickmaking machines.

Sutton and Sons, Reading.—Large collection of horticultural and agricultural seeds, arranged in glass cases and bags; also natural grasses in pots, and variety of agricultural roots.

Carter and Co., London.—Samples of mixed and natural grasses in cases and pots; and assortment of agricultural and garden seeds, roots, &c.

Raynbird, Caldecott, Bawtree, Dowling, and Co. (Limited), London.—Collection of specimens in sheaf and samples of wheat, barley, oats, grasses, and roots; new forage plants, manures, oilcakes, and feeding stuffs.

Beach, Dudley.—Farinaceous food for cattle, condiment for horses, and XX superfine flour.

The South of England Manure Company (Limited), Southampton.—Universal manures and dissolved bones.

MELLERSH AND JOLIFFE, London.—An assortment of manures for corn, grass, mangel and roots, hops, &c.; flour or powder brimstone, and anti-friction grease.

LEWIS, ASH, AND CO., London.—Samples in bottles and casks of new patent disinfectant, new compound for feeding fruits and flowers, new basic manure, and series of bottles of chemical compounds.

CARSON AND SON, London.—Samples of anti-corrosion paint, turpentine, varnish, and painting materials.

SIMPSON'S CATTLE SPICE COMPANY (Limited), London.—Variety of canisters and boxes of Simpson's cattle spice and digestive and condition powders for horses.

PAGE AND CO., Bedford.—Drain-pipe and tile-machine, root-pulpers, linseed-cake-mills; hand, horse, or steam power chaff-cutting machines; horse-rakes and horse-hoes; sets of twitch and diagonal harrows; pony, light one-horse, one-horse, light general, and general purpose wrought-iron wheel ploughs; scaffers, whippletrees, and wrought-iron galvanized pig troughs.

ROLLINS, London.—American and revolving horse-rakes, mounted grindstones, cast-steel hay and manure forks, American thermometer churns, garden and railway barrows, and "Little Giant" wheel jack.

COLTHURST, SYMONS, AND CO., Bridgewater.—Facsimiles of "Royal Flemish Farm," showing covering of patent Roman tiles, ridging with patent ridge tiles, and sheeting with patent eaves tiles.

PERKINS AND BELLAMY, Ross.—Wrought-iron balance power and hand carts, and combined and single iron sheep rack and troughs.

PAGE, Morchard Bishop.—Light two and one horse reaping machines.

IRELAND, Manchester.—Four, six, eight, twelve, sixteen, and forty gallon patent three motion churns; wood model, full size, of terminal saddle boiler.

TOPHAM, London.—Assortment of sausage making and mincing machines, and a variety of small articles for agricultural and domestic service.

SAINTY, Lynn.—Combined corn-drill and horse-hoe, sheep trough, and nailless horseshoes.

RUSE, Brentwood.—Two patent irrigators.

COOK, Salisbury.—Specimens of white building and hard clinker bricks.

BLINKHORN AND HILL, Spalding.—Patent double-acting brigade and farm fire engine, garden engines, and pumps.

BURROW, Exeter.—One and two horse reaping machines.

M'KENZIE AND SONS, Dublin and Cork.—Specimens of fence for folding sheep.

THE ANNUAL MEETING

took place on Wednesday, the Earl of PORTSMOUTH presiding.

Mr. GOODWIN, the secretary, read the annual report, which congratulated the society on an increase of 38 members, there being now 1,141 in the society. The financial report shows an increase of £514 in the cash balance, £923 in Consols, and the plant is valued at £2,891. The report declared the implement exhibition unparalleled, and the show of horses superior to all former shows.

Mr. St. John Maule was elected by acclamation a life member, Lord Falmouth was appointed President, and Lord Poltimore and Mr. Page, M.P., Vice-Presidents for the ensuing year. The old members of Council going out of office were re-elected, the following new members being elected: Eastern Division, Mr. Henry Robertson, Over Stowey. Western, Mr. R. R. Daw, Exeter; Mr. R. Hicks, Bodmin; Mr. E. B. Willyams, St. Columb.

Mr. KNOLLYS then introduced a motion which led to considerable discussion for rescinding the 7th rule, in order to hold the show for '67 in Salisbury, as the citizens had readily subscribed the £900, and placed the show-ground promptly in the hands of the Council in the expectation that there would be a show of cattle. A memorial, signed by 500 inhabitants of Salisbury, in favour of the motion was put in.

Mr. PITMAN seconded the proposition.

Mr. G. POOLE, on moving an amendment, leaving it optional to the Council to decide if they will show at all next year, but requesting them to visit Salisbury if they do have a meeting, said he was afraid members of the Council were committed to a promise to come again to Salisbury; but if rinderpest continued, and unless there was a better financial prospect than they now had, it might be desirable not to hold a show next year.

Mr. DREWE seconded the amendment.

After some discussion the amendment was put, when 14 voting for it, and a good many more against it, it was lost.

Mr. GORDON moved an amendment, the effect of which would be to give the show to Salisbury whenever held. For this on a show of hands the numbers were equal, 26. Mr. Knollys' resolution was then agreed to *nem. con.*, and a vote was passed to the chairman.

THE DINNER,

held on the same day in a circular pavilion in the yard, was very thinly attended. Lord Portsmouth presided, supported on the right by the Marquis of Bath, and by the Mayor of Salisbury on the left.

Earl PORTSMOUTH, on rising to respond for the society, bore testimony to the fact that it had been the hearty desire and endeavour of every member of the council to promote the interests of the western counties and the prosperity of this society. The revival of this society had been a great boon to the whole western district. He spoke now as a landowner, and he would say that a great debt of gratitude was due from them all to his honourable friend Mr. T. D. Acland, for the steps which he had taken to revive the society, and which had proved so completely successful. Regretting the absence of Mr. Acland from that meeting, his lordship went on to point out some of the benefits which the society had conferred on the district, particularly alluding to the encouragement it had afforded to local implement manufacturers, and to the general use into which good implements were now brought throughout the south-western counties. The council made every exertion to get together at those shows an instructive exhibition of good implements and good stock. He could not pass unnoticed the compliment paid him as president of the society. He certainly felt it to be his duty to do his utmost to promote agriculture, and he did not know that he could do it more usefully than by supporting the Bath and West of England Agricultural Society. He must not forget to thank his brother-members of the council for the assistance they had invariably rendered him during his year of office. Without that aid they could not have seen the society in its present flourishing condition. Long might it flourish, and he trusted that next year they might have even a better gathering than they had that day seen.

Mr. T. F. GROVE, M.P., proposed "Success to the Royal Agricultural Society," to which Mr. MILWARD responded.

THE ROYAL AGRICULTURAL SOCIETY OF IRELAND.

THE HALF-YEARLY MEETING OF THE SOCIETY

was held in Dublin, on Thursday, June 7, the Earl of Erne in the chair.

The members present were: Lord Clonbrock, Lord Crofton, Lord James Butler, Hon. Charles J. Trench, Hon. Bowes Daly, Hon. Charles Preston, Hon. St. John Butler, Sir George Hodson, Bart., Sir Robert Paul, Bart., Lieutenant-General Hall, C.B., William Donnelly, C.B., Phineas Riall, L. Bland, Q.C., W. Fetherston, H. Charles Cannon, J. Kincaid, Robert Wade, W. S. Purdon, Charles C. Vesey, M. O'Reilly Dease, John Borthwick, Edward Purdon, J. M. Boyse, Hans H. Woods, D.L., James Ganly, J. F. Byrne, Leopold Cust, J. G. Dawson, A. G. Graydon, James Brady, C. N. Townsend, S. M'Culloch, Alexander S. Dean, A. E. Bagot.

The minutes having been read and confirmed, Captain Thonhill read the following

REPORT FOR THE HALF-YEAR ENDING MAY, 1866.

"In presenting the half-yearly report of the proceedings of the Society, your Council feel pleasure in stating that forty-nine members have been elected to your Society since the last half-yearly meeting.

"The local farming societies, in connection with the parent society, continue to render assistance in introducing a system of farming more suited to the country than has been heretofore adopted. Through their instrumentality your Society had distributed among the tenant farmers the sum of £298, besides 104 second-class medals.

"Since the last general meeting a special meeting of the Society was called for the purpose of considering the necessity of establishing a cattle insurance company, to compensate the owners of cattle dying by the cattle-plague, or being killed to stamp out the disease, should it unfortunately visit this country. In pursuance of the notice issued, the meeting took place; but owing to the subject having been discussed in Parliament in the interval of the fourteen days' notice, which according to the 5th rule should be given, the meeting, according to your 21st rule, was debarred considering the subject. Your Council have considered it necessary to recommend to you that the following alterations should be made in the general rules of the Society:

"4th rule, last paragraph.—The subscription of new members, elected subsequent to 1st of November in any year, to entitle them to all the privileges of membership until 31st December in ensuing year, shall read—new members elected subsequent to the last *Thursday in October in any year*.

"5th rule, last paragraph.—The Council may at any time call an extraordinary general meeting, on giving fourteen days' notice, shall read—on giving *seven days' notice*.

"6th rule.—Every general meeting of the Society shall be publicly advertised a fortnight, shall read—*seven days*.

"7th rule.—The president and vice-presidents shall be annually elected, and selected from annual subscribers, life members, or donors of £100 to the funds of the Society, at the first half-yearly meetings of the Society, and the names of persons recommended for those offices by the Council shall be exhibited in the secretary's office one month previous to the said half-yearly meeting, shall be altered to—The president, vice-presidents, shall be annually elected and selected from annual subscribers, life members, or donors of £100 to the funds of the Society, *at the meeting of the Council held in December*, and the names, &c.

"12th rule.—Your Council recommend that the last paragraph of this rule be omitted, commencing from—the Council may also hold weekly meetings, to the end.

"19th rule.—No general rule of the Society shall be rescinded, suspended, or altered except at one or other of the half-yearly stated meetings of the Society, and then only upon the recommendation of the Council, adopted at a meeting, and promulgated by public notice to the members of the Society one fortnight previously, shall read—*seven days* previously.

"The annual cattle-show of your Society was fixed to be held in Dublin for 1866. Your Council have given the subject deep consideration, and a diversity of opinions has been expressed as to the propriety of holding one. It was brought before your Council by resolution, and very fully discussed, when it was decided on a division that there should not be any show in 1866, owing to the rinderpest, which was, and still is, raging in the sister countries, which decision will, we trust, meet with the approval of the meeting.

"In consequence of alleged cases of rinderpest having manifested themselves at Drennan, in the county of Down, towards the end of April, the cattle-plague committee of your Council was called together on the 16th May inst, and adopted certain resolutions, calling upon the executive to direct that Drs. Maypother and Foot might be associated with Professor Ferguson, for the purpose of making a *post-mortem* examination of any animals that might subsequently be attacked.

"A deputation from such committee accordingly waited upon the Under-Secretary on the same day, and strongly represented that such combined action would be most desirable. To this request no reply has yet been received.

"Your council have again to express their regret at the total want of competition this year for the Leinster Challenge Cup and the provincial gold medals for newly-erected labourers' cottages and improved previously-existing houses; neither are there any competitors for the Talbot de Malahide Challenge Cup for farm-buildings suitable for fifty-acre farms, nor for the Associates' medals.

"Your council have made important alterations and modifications in the conditions under which the above prizes can be competed for, and hope to obviate any such complaint for the future.

"The Government has again placed a sum of £3,000 at the disposal of a joint committee of the Royal Dublin and Royal Agricultural Societies, for the purpose of encouraging improved flax-culture in Munster and Connaught. The committee have had several meetings, and have now thirty-eight competent men employed in as many poor-law unions in the two provinces. The committee of last year have issued their report; and the result of their labour appears most satisfactory.

"Annexed is the report of the analyses made by Professor Apjohn for the members of your Society for the last twelve months.

"'REPORT OF PROFESSOR APJOHN, CHEMIST TO THE SOCIETY.

"'During the half-year ending with January, 1866, I find that nineteen analyses were completed and reported upon. The subject of one of these was a good Peruvian guano; six were damaged guanoes; three were superphosphates; three were manures of a saline nature; three were linseed-cakes; one a sample of kelp; one an Ichaboe guano; and one a water-plant which has been brought to this country from Canada, and which has multiplied in some districts to such a degree as to prove a considerable nuisance.

"'The damaged guanos were originally of good quality, but had their respective values considerably reduced by contact with water.

"'The linseed-cakes were also good; and the same may be said of the superphosphates, which had an average money-value of about £9 9s. per ton.

"'The chemical work done in my laboratory for the Society is always less from July to January than from January to July; but I may observe that it augments from year to year, and that its increase has been unusually great since January last—in fact, so considerable that, should it continue, I fear it will be scarcely possible for me to perform, under the existing arrangements, the work which I have undertaken for the Society. Since February last I have made fourteen analyses for one member of the Society, and for a second eight.

"'In the reports which I make of the results of my experiments, I am in the habit of giving not only the per-centage composition of the matters analyzed, but also their money-value; and this latter information is, I believe, very acceptable to some members of the Society. It is right, however, it should be known that the values of the proximate constituents of manures, though subject to variation, are treated by me as *constants*, and that, therefore, the money-values which I give are not always *absolutely* correct. Notwithstanding this drawback, they give with exactness the *relative* values, and show with precision how much one variety of manure may be considered to exceed or fall short of another in fertilising influence. To correct in every instance the *constants* used, according to the prices of the day, would be nearly impracticable, and, I may add, unnecessary for putting the farmer in possession of such information as would enable him to understand the real value of the manures which he may desire to purchase. "'I am, dear sir, faithfully yours,

"'JAMES APJOHN.'

"Your council have to report that they have increased the salary of the very efficient Secretary, Captain Thornhill, from £200 to £250 a year, and are happy to state that the finances of your Society are in a very satisfactory condition, as shown by the balance-sheet annexed."

Annual Statement of the Receipts and Expenditure of the Royal Agricultural Society of Ireland for the year 1865.

DR.

	£	s.	d.	£	s.	d.
By balance to credit last account				£270	1	9½
Subscriptions received from 908 members for the year, up to 1st May, 1866				1,376	15	0
Lodgment to the credit of the Society from the Local Committee of Clonmel Show				500	0	0
A year's interest on £5,585 5s. 9d. at 3 per cent., less income tax ...	£164	15	4			
Half year's interest on £428 1s. 9d. at same rate	6	5	3			
Interest on two Deposit Receipts ...	9	2	2			
				180	2	9
Lodgment from Joint Flax Committee of 1864 for Stationery used by them in office of this Society				1	0	0
				£2,327	19	6½

CR.

	£	s.	d.	£	s.	d.
ESTABLISHMENT—						
To Money Premiums awarded through Local Societies ...	£193	15	0			
Medals for same £183 1s., and for Parent Society £35 7s. 6d ...	218	8	6			
Secretary's Salary for year ...	212	10	0			
Chemist's do. do.	100	0	0			
Accountant's do. do.	80	0	0			
Mr. Callinan's gratuity	29	18	0			
Hall Porter's Wages	26	0	0			
Lithographing £35, Advertising £12 19s. 6d., and Stationery £3 11s. 9½d.	51	11	3½			
Postage	25	18	7			
Rent £130 8s. 6d., Insurance £4 ...	134	8	6			
Office Furniture and Painting ...	29	10	10			
Incidental expenses	12	17	6			
Prizes for Essays on Farming ...	40	0	0			
				£1,154	18	2½
ANNUAL NATIONAL SHOW—						
Judges', Stewards', and Directors' expenses at Show	£101	8	10			
Mr. Corrigan's expenses £13 17s. 6d., and gratuity £10	23	17	6			
Secretary's expenses	20	10	11			
Accountant's do.	7	14	0			
Premiums awarded and paid ...	659	0	0			
Printing and Advertising	53	14	6			
Badges and Drafting Catalogue ...	4	5	6			
For Plans and Specifications ...	4	4	0			
				874	15	3
MISCELLANEOUS—						
Arrears of Premiums of 1864 paid	£20	0	0			
Rent of Room and Advertising for Cattle Plague Committee ...	8	9	8			
Expenses of Judges of Labourers' Dwellings	15	14	2			
Inserting Subscribers by Counties in Thom's Directory	12	12	0			
				56	15	10
Balance to credit				241	10	3
				£2,327	19	6½

Donation Fund in 5 per cent. Stock £5,585 5 9

Examined by the finance committee, and found correct.

CHARLES C. VESEY, }
C. J. TRENCH, } Members of the Finance Committee.
WILLIAM DONNELLY, }

We have carefully examined the above accounts, and compared the vouchers with the items, and find them to be perfectly correct.

ROBERT MOLLOY, }
V. O'B. O'CONNOR, } Auditors.

Dublin, 25th May, 1866.

The Hon. ST. JOHN BUTLER said it afforded him great pleasure to move the adoption of the report, and he hoped the members would agree with him in thinking that it was a most flattering as well as an encouraging report. If they looked at it in a financial point of view, the report spoke for itself. He did not recollect seeing the society in the same position, financially or otherwise, as it was that day. The society at large, he conceived, were largely indebted to the council for the manner in which they had transacted their business, and the zeal which they had manifested in promoting its welfare.

Sir GEORGE HODSON, in seconding the motion, observed that he had nothing to add to what had been already stated, further than to remark upon certain alterations which had been made in some of the rules, to which they requested the sanction of the general meeting. It was proposed to change the fifth rule, which heretofore required fourteen days' notice to be given before calling a general meeting of the society; and the council asked to be permitted to do so on seven days' notice. The reason for that was, that events sometimes occurred when it would have been desirable to have discussed some matters, on giving seven days' notice, which it was found impossible to do under the existing rule of the society, which required fourteen days' notice to have been given. The fourteen days, it so happened, occupied a space between the date of the notice and the assembling of Parliament, which rendered it impossible for them to discuss a matter at that distance of time, which otherwise they should have discussed at an earlier period; and for that reason they wished that in future seven days would be considered sufficient notice. The other alteration proposed was a change in the 19th rule, which referred pretty much to the same thing. When that rule was adopted, a great many years ago, the capability of locomotion was very far from what it was at present, and it was very desirable that they should have the power of giving as quick a notice as possible to the members throughout the country to assemble and discuss any matter of importance which might arise. He did not think there was any other matter in the report with which he should trouble the meeting, and therefore he would conclude by seconding the adoption of the report.

Mr. ROYSE said he believed that was the time for moving an amendment to the report; but inasmuch as circumstances had altered since he intended to adopt that course, he would not do so. However, he thought it was a matter of great importance that the subject to which he alluded should not be passed over at a general meeting of the society, and that was a paragraph in the report in which it was stated that the council had decided on not holding their annual cattle-show this year. At the time he intended to move a direct negative to that resolution, they had no rinderpest in the country; now it was said to have made its appearance amongst us, and, under these circumstances, he did not intend to move the amendment; but he thought that it was a matter for consideration whether an exhibition for horses, sheep, implements, and pigs should not be held early in the month of September, on the same principle as the horse-show was held by the Royal Dublin Society. By doing so it would afford a great many members who usually supported them in holding their shows an opportunity of exhibiting and purchasing. He therefore thought the Society should suggest to the Council to take the matter into their consideration; for really he did not like opposing a report which was in every respect so worthy of the Society, the adoption of which had been proposed and seconded by such influential members. However, having been asked to bring forward the subject by many respectable members, he thought it right to do so, and he would now leave it in the hands of the meeting, to deal with the matter as they thought most prudent. He would omit the latter portion of the paragraph in question, substituting in its stead, "We consider that it would be advisable to hold an exhibition of horses, sheep, implements, and pigs, which exhibition should not prevent the Society from holding their annual show in Dublin next year," He would exclude cattle altogether. The Society could hold their annual show in Dublin next year, and this was simply to afford an opportunity of having a show next September for other articles which were usually exhibited. He trusted that the meeting quite understood the motive which actuated him in bringing forward this question. It was not for the purpose of opposing the report in any way whatever, but rather that such an important question should be canvassed and discussed, and finally settled by the meeting.

Mr. FETHERSTONEHAUGH, in seconding the motion, said he knew from his own experience that once they allowed the excitement to cease, for however short a time, they would find their subscriptions rapidly diminishing. No danger could be apprehended of bringing the rinderpest into the country when they excluded bovine animals from the show. In his humble opinion, the Society would suffer exceedingly in many respects, particularly in the diminution of its funds, if a show was not held in Dublin this year.

Mr. WADE said he did not rise exactly for the purpose of opposing Mr. Royse's motion, but to offer a few observations why he conceived it would be unwise for the meeting to adopt it. In the first place, it did not fall entirely under the power either of that meeting or the Council to decide on holding such a show as that which Mr. Royse had sketched out for them. Gentlemen must be aware that for any show held here the local committee was responsible for the expenditure incurred and likewise for an amount of £500 which they subscribed to the Society in aid of the premiums that might be offered for the show. They had a very good guarantee from influential and wealthy gentlemen in Dublin, guaranteeing the arrangements for the show-yard, guaranteeing to the Society a sum of £500, and guaranteeing that they should have proper provision made for holding the show, free of any expense to the Society. Under that guarantee those gentlemen were not compelled to hold the diminishable show proposed to be held. They might turn round and say to the Society that they guaranteed the £500 if they held a cattle show; but if they had only a sheep, pig, fowl, and implement show, it appeared to them that it would be a financial failure, and it would be of no adequate benefit to the country, or such as would warrant them in collecting subscriptions, or that they should put their hands in their pockets to make good what had been guaranteed for different circumstances. For these reasons he did not think the meeting could come to any sliding resolution on the subject. He conceived that if the Society held any show this year in Dublin, by that act it would be precluded from the right of holding its show here next year, no matter how stripped of its wings that show might be. If it was of advantage that a show such as Mr. Royse described should be held—and he conceived it would be useful to do so—it must be done by a local committee in Dublin, independently of the society, without any further aid from the society than such as individual members would be ready to give and ready to yield; but he urged the meeting, however anxious they might be to hold such a show, not to bind the council to adopt a course which would in any way interfere with the right to hold the show in Dublin next year.

Mr. M. O'Reilly Dease did not think the members would feel otherwise than grateful to Mr. Royse for the temperate manner in which he had introduced the subject. The council had given the question their most anxious consideration, and what weighed most with them was a disinclination to incur the responsibility of doing what might, unfortunately, be the means of introducing the plague into Ireland. He thought it would be almost an absurdity, in the presence of so much danger, to continue their operations as if there was no such danger impending; and he hoped the meeting would confirm the decision at which the council had arrived, after mature and careful consideration.

Mr. Fowler said he was one of those who had opposed the proposition of holding the show in Dublin, in consequence of the responsibility thrust on the council, as he thought it was more advisable that the responsibility should rest on members of the society at large. It now rested with the meeting to do as they deemed proper. Since the rinderpest had come into the country there was a stronger reason for opposing the project. He agreed with Mr. Wade that if they held any kind of a show here this year, it would be giving up their privilege of holding it in Dublin next year; and besides that, it would not obtain that *prestige* which usually attended the shows of the society.

Lord Clonbrock observed that he was also one of those who had opposed the holding of the annual cattle-show this year, and he did so when the disease was not so near home as it appeared to be now. He conceived that it would be unwise, in the present state of the country, to incur the responsibility of bringing cattle in large numbers together. If he was of that opinion then, he was more convinced of its prudence now. As to the proposal to hold a diminished show in Dublin this year under the auspices of the society, he quite agreed with what had fallen from Mr. Wade. To have a cattle-show without cattle would be like playing the play of "Hamlet" without the part of *Hamlet*. He hoped the meeting would not give instructions such as would render it imperative on the council to take any steps in the matter. It would be better, he thought, if it was deemed advisable to hold a diminished show in Ireland, such as that suggested, that it should be held under other auspices than that of the society.

Mr. Royse intimated that as he had now attained the object he had in view, he would withdraw his amendment.

The motion for the adoption of the report was then put from the chair, and adopted unanimously.

Mr. Bland, Q.C., said he had a suggestion to make to the Council, as the matter had been now settled in a manner in which he perfectly concurred; for as he feared the cattle plague had made its appearance in some parts of Ireland, it would not be judicious to hold their cattle show in Dublin this year. It was necessary, he thought, for the well-being, not only of the Royal Agricultural Society, but of agriculture generally, as they had resolved not to hold their cattle show this year, that increased encouragement should be given to local societies that might, in their judgment, determine to hold their shows throughout Ireland. If the Royal Agricultural Society lay dormant in 1866, when the Government had withdrawn its grant to the Royal Dublin Society for agricultural purposes, the existence of that Society would not only be endangered, but a deep wound would be inflicted on agriculture generally in this country; and, therefore, he would suggest to the Council the necessity of giving increased encouragement to local societies, by granting larger sums for the growth of better corn and turnip crops. Let the Royal Agricultural Society show that it was not neglectful of the interests of the country, and take means to promote its utility and use its influence.

Mr. M'Culloch, in seconding the motion, urged the necessity of their giving some stimulus to the local societies, who had done much to improve the breed of stock in their several districts, although many of them found it difficult to make their incomes meet their outgoings. Any additional stimulus given by the Royal Agricultural Society would be a great boon, and a great advantage to Ireland in general.

Sir George Hodson, Bart., remarked that, in the absence of any formal resolution, he might be permitted to say that the Council would feel disposed to concur in the view suggested, so far as an increased encouragement of roots was concerned—not that they should increase the amount given to any local society to bring cattle together, but to bear in mind that any reserve fund they would have would be with great advantage applied to the uses referred to by Mr. Bland.

Mr. Bland stated that he had no objection to apply his resolution to crops. Any surplus funds of the Society would, he thought, be well applied to the encouragement of the growth of roots or green crops, leaving to the Council the mode in which it should be applied. He would move the adoption of the following resolution:—

"Resolved—That inasmuch as no cattle show under the auspices of the Royal Agricultural Society is to be held in the year 1866, that the incoming Council should take into their consideration the propriety of giving increased encouragement to the growth of green crops in Ireland, so far as the funds of the Society may be available, leaving the mode and manner of such encouragement to the incoming Council, either through the influence of local societies or otherwise."

Mr. Wade, in order to remove any erroneous impressions, desired to state that the sum they would have on hands this year, by not holding a show, would be little more than £300, and, therefore, it should not be supposed by the public in general that all the funds expended on the large agricultural shows which they held, amounting to £2,000 or 3,000, were saved by not holding the show. The gross sum they saved by not holding the show this year was £350. Anything that was done in the country in the way of encouraging the growth of green crops was attended with great expense, because they extended over a vast area, and must be inspected by gentlemen appointed for that purpose, thus entailing a considerable outlay.

Mr. M. O'Reilly Dease suggested that Mr. Bland, having heard the opinion expressed by Sir George Hodson, should withdraw his motion, so as not to hamper the new council with it.

The resolution was, however, put to the meeting, and, on a division being taken, was carried by a considerable majority.

Lord Crofton said an expression had fallen from one of the speakers in reference to the expenses that might accrue from inspection of the green crops. That might be obviated very much by means of the local society, so that those districts which had not a local society were not worthy of their consideration.

Sir George Hodson, Bart., moved the appointment of office-bearers, which are the same as last year; and that they held office until the 31st of December, instead of until May, 1867, as heretofore.

The motion, having been seconded, was put to the meeting, and carried.

Mr. **Kincaid** moved that the alterations of Rules 4, 5, 6, 7, 18, and 19 be adopted.

Mr. **Featherston H.** seconded the resolution, which was passed.

A vote of thanks having been passed to the auditors, Messrs. V. O'B. O'Connor and L. R. Molloy, the meeting separated.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

THE SUPPLY OF MEAT TO LARGE TOWNS.

At the weekly meeting of the Royal Agricultural Society, on Wednesday, May 30, Mr. **Thompson** in the chair, Mr. Herbert read a brief paper on the "Supply of Meat to Large Towns," it being intimated that the subject would be treated by him in a more copious manner in the Society's *Journal*.

Mr. **Herbert** said: The long agitated question whether it is possible to furnish the Metropolis with adequate supplies of meat for consumption without the aid of a live-stock market, evidently requires a solution at the hands of practical men. On the one hand, it has been argued that there would not be the slightest difficulty in providing for the wants of nearly 3,000,000 of people by means of slaughter in the provinces; and, further, that many of the difficulties which surround the live-meat question would be got rid of. There are so many interests involved in the question before us, that I purpose entering into a few details bearing upon a matter which affects the interests of the consuming classes. In the first place, let us see whether it is possible, at all periods of the year, to furnish the Metropolis with say, 1,500,000 additional carcases of sheep, and 250,000 additional carcases of beasts, irrespective of lambs, calves, and pigs, in a wholesome and saleable condition? The numbers I have here quoted represent the average supplies of live stock annually disposed of in the great Metropolitan Cattle Market. It is well known that the graziers themselves have little or no accommodation on their respective farms for slaughtering cattle. So that it would be found necessary to erect in the neighbourhood of large towns abattoirs of no small dimension to prepare the meat for transmission per railway. If we take the Norfolk season, we should find that about 12,000 beasts would be killed at Norwich during the first six months of the year. Colchester and other towns would require abattoirs for a portion of the Essex breeds; whilst during the last six months, the slaughtering of stock would be chiefly carried on near Lincoln, Peterborough, &c. The difficulties in this respect would not be great; but we have to consider two important points—as regards the conveyance of the meat to London, and the cost of carriage. Nay, more, we must not forget to consider how, and upon what terms the offal is to be disposed of, in possibly localities for which there is very little demand. It is well known, notwithstanding the amount of competition between the various companies, that the charges for the conveyance of dead meat to London exceed those for live stock by nearly or quite two-thirds. During the period that the movement of live stock to London was prohibited, those charges, which of course, entered into the retail price, were severely felt by the consumers. There would, of course, be no difficulty for the great lines in carrying any quantity of meat; but who does not know that country-killed qualities invariably sell at low quotations compared with those realised for meat slaughtered in the Metropolis, notwithstanding that qualities are equal? Besides, other objections might be easily urged against the proposed system. Naturally, the grazier would have imposed upon him a great additional amount of trouble. He would require honesty of purpose on the part of those to whom he might intrust his stock; he would require separate accounts of the weight of each carcass, and the price at which the offal was disposed of. Again, he would have to run the risk of violent fluctuations in the value of meat in the dead markets, and of absolute losses from the carcasses arriving in the metropolis in warm weather in bad condition. But how is the offal to be disposed of? Additional tanneries, soap-works, and boiling-houses would be necessary in the vicinity of large towns, and the organization of a system which would be highly expensive. You may have the offal in various localities; but how can it be consumed? Admitting that a portion of it were used on the spot for local purposes—what is to become of the remainder? In London it is easily disposed of: hence, agents would be despatched from the metropolis to purchase rough fat, hides, skins, &c.; but, owing to the heavy railway charges, they could only offer miserably low prices for them. But it may be said that the proposed system has long worked well in Scotland, Yorkshire, and the west of England, from whence we have long drawn very large quantities of dead-meat for consumption in the metropolis. But it must be understood that the offal in Scotland, Yorkshire, and the west of England is readily used up. Most of the wool and hides produced in Scotland are converted into use; whilst in the west of England, nearly the whole of the supplies of pork are converted into bacon, hams, and lard for London consumption. Nay, more, the immense importations of pigs into Bristol from Ireland are slaughtered for the same purpose. With all these objections before us, it is possible, with the necessary facilities in London for the sale of dead-meat, to supply London from distant localities with an adequate supply of meat. But this can only be done in cold weather, or say during six months of the year. During the rest of the season, a live-meat market would be indispensably necessary, or we should have an amount of loss which would far exceed that sustained by the cattle plague.

Earl **Cathcart** felt very much indebted to Mr. Herbert for his observations, and thought it must be satisfactory to the meeting to have had the discussion opened by a man of such practical knowledge, and who had written so much on the subject. It appeared to him that the real question raised by Mr. Herbert was as between live and dead-meat markets. They ought not to lose sight of the fact that, long before the cattle-plague was thought of, the idea was entertained that, in consequence of the introduction of steam and railway conveyance, great alterations would take place in the dead-meat markets of large towns. Now the important point which they had to consider, in the first place, was the great increase which had marked the progress of the population, and the limited extent of the area of this country, and which had necessitated very considerable importations from abroad. There were about twenty millions of people in England and Wales; and he found by the last Cattle Census that the number of cattle within those limits was under four millions. Therefore, if the cattle in this country were divided amongst the population, there would be about one-fifth of an ox, or beast, for each person; so that, if we were dependent for meat upon England and Wales alone, that number of beasts would not hold out for a month. Hence, our great reliance was upon large imports from abroad—a state of things which must tend very much to increase the dead-meat markets, because it would be unsafe, owing to the existence of the cattle-plague on the Continent, to have foreign beasts travelling through the country on our railways, without a system of quarantine; and, rather than have quarantine, the establishment of abattoirs and slaughter-houses at the ports of debarkation would be preferred, where the foreign cattle might be slaughtered and sent to London as dead meat. With regard to what Mr. Herbert had said respecting offal, he had himself witnessed the difficulty experienced in large meat-markets of transporting offal. It was packed in baskets, and sent in a most disgusting state; but he saw no reason why travelling larders should not be constructed, in which the offal might be hung up and be supplied with a free circulation of air, so that it might arrive at its destination in fair condition. Something had been said about railway charges; and he really thought it an unjust proceeding to make capital out of what was a public calamity by charging higher rates for the carriage of dead meat than for the carriage of live. He was willing, however, to attribute this to the possible circumstance that new arrangements had not yet got into working order, and he presumed that the tariff for the conveyance of dead meat would be in proportion to that for live, when the thing had been more fully developed. With reference to the statement that country-killed meat did not look so well as that which was slaughtered in London, he would observe that the "look" was not everything. "The proof of the pudding was in the eating;" and he questioned much whether the London polished meat—that was to say, meat that was polished up with warm water, grease, and other stuff, just as an old apple-woman at a stall polished her fruit every morning—was really so good as the country meat. But there was no doubt that the system of polishing and other niceties and refinements which were so well understood in London would also become familiar in the country, as soon as it was discovered that it was worth while to resort to it. In alluding to the difficulty there was in regulating prices, Mr. Herbert had left out of account the service which the telegraph might render. It was hardly possible to over-rate the importance of its agency in reference to this matter, and a practical man had informed him that they were perpetually telegraphing from Newgate Market with regard to the supply of dead meat. A telegram was sent down, say, to Aberdeen; and the cattle, which were all ready for slaughtering, were at once despatched and sent off by railway. There was a curious circumstance connected with the London market and the subject of offal. It was that beef-fat was regularly sent on its travels into other lands, and when it came back it was not in its original shape, but as tallow.

Mr. HERBERT remarked that it was purchased in London by the Dutch; and being carried into Holland, it was there converted into butter and tallow, and in that form was returned to London.

Earl CATHCART: That was an agreeable piece of information to impart to the consumers of butter. Moreover, if they knew how the "roast beef of old England" was poured into Newgate market, he did not think they would relish it as they did now. Mr. Herbert had referred to the subject of competition; and he believed that all authorities were agreed that a central metropolitan market must be established, because of the necessity for having the means of regulating prices. If there were many meat-markets prices might greatly vary, and the competition which was essential for the regulation of the prices of meat be reduced. All authorities, then, were pretty well agreed as to the necessity for having a central metropolitan market for dead meat; but he spoke with all deference in the hearing of Mr. Herbert, who, of course, possessed better information than he could be expected to have. Here he would refer to the report of the Commission of Inquiry which sat in the year 1850, on the subject of meat markets in the City of London; and he thought the evidence he was about to quote from that report was of particular importance, because it was given at a period when a cattle plague panic was not even dreamt of. They said that the supply to the City of London was more in summer and less in winter; and that the number of carcases sent to Newgate market in 1849, according to Mr. Giblett's estimate, supposed by the Commissioners to be under the mark, was of beasts 12,000, sheep 5,250, calves 800, and pigs 400. In hot weather, they said the dead-meat sales fell off, and those of the live increased. That would always be the case, and it was an additional reason why abattoirs or slaughter-houses should be established within tolerable distances of town for the summer supply; for it could not be altogether depended upon from distant counties, though it might from the home counties. The Commissioners further stated that they had been informed by the trade that the farmer would be induced by steam carriage to learn to slaughter, pack, and consign. Again, they also said that forty years previously there were only 13 salesmen in Newgate market, and that in 1849 they had increased to 200. This showed the great development of the meat trade in consequence of the use of steam carriage. Formerly, it appeared, the home counties only could send dead meat into the London market; but in 1849 much of it came from Scotland, as it did, now; and they added a fact which he was not acquainted with before reading their report, and it increased his sense of the inadequacy of Newgate Market—that the area of that market was only 2 rods and 45 perches. When one considered the enormous quantity of dead meat that was sent into Newgate Market, all packed and piled up, it was scarcely possible to conceive the scene of confusion presented there. Vans and carts were crammed into a street only 16 feet in width, where one could not pass another, and there they were unpacked in the midst of crowds of purchasers. The Commissioners in their report likewise referred to the disgusting manner in which the men carried the meat on their shoulders in contact with their heads and faces, and the dirty handling to which the carcases were subjected. They spoke besides of the quantity of meat which was spoiled for want of air, and space to hang it in. Then there was an interesting article with regard to the probable extention and rapid rise of the dead-meat traffic, which appeared in one of the numbers of the *Quarterly Review* in the year 1854, and to which he would direct attention, as the information it contained had struck him with great force. That article was founded very much upon the report of the Commission already referred to. At that time it stated there were 36,487 tons of dead meat annually pitched into London; that the Eastern Counties Railway supplied 10,398 tons, and the Great Western 13,152 tons, and that the Eastern Counties in one Christmas week sent to Newgate Market 1,000 tons of dead meat. It went on to state that the annual value of the meat consumed in London was upwards of £14,000,000 sterling; and reference was made to the importance of railway arrangements for the transport of dead meat, so as not to injure it. He would next pass on to notice the report of the Committee of the House of Commons, which sat in 1856. That report contained much interesting evidence with respect to the metropolitan meat market, which he had not had time to go into thoroughly; but he would just take a brief glance at it. Amongst other things, it mentioned the single road leading to Newgate Market, that only one carriage could pass at a time, and the complete blocking up of the approaches by vans and carts. It then proceeded to say that steam had given a remarkable impulse to the trade in dead meat both in England and Scotland, and that all salesmen agreed that the trade in dead meat would increase and become the principal source of supply. This, it would be observed, was in the year 1856; and of course before the cattle plague was thought of. In the next place, the report went on to dwell upon the importance of establishing a central market for the metropolis, of giving facilities in such a central market for the disposal of the offal among the poor people who required it, and also the essential importance of competition regulating the price of meat. The committee also said there was no evidence to lead them to the conclusion that a dead-meat market, if properly managed, would create anything like unwholesomeness in its vicinity. There was always something to be learned from our neighbours across the Channel, and he should like to quote the opinion of one of the most acute, clear-headed, and sharp-eyed Englishmen that had ever travelled: he meant Sir Edmund Head. A few years ago, namely, in 1852, Sir Edmund published an interesting and popular book, with the title of "A Faggot of French Sticks." In one of the chapters, the author described a visit which he had made to the *abattoirs* and pig-slaughtering establishments in Paris, and a conversation which he held with the *chef* of the latter, in the course of which the *chef* stated the principle by which pig-killing was regulated. "Sir," said he, "in Paris no one has a right to kill a pig!" And that, it appeared, was the principle upon which the whole thing hinged. The killing was all done at the Government establishments. The Paris *abattoirs* were established by the Emperor Napoleon the First. There were 5 of them for cattle, outside the walls. They were built like cavalry barracks, and the dimensions of one of them were in length 389 yards by 150 yards in breadth. Arrangements existed for the immediate preparation of the blood for the purposes of commerce, and for disposing of the entrails. There were also a tripery and melting houses, and even when the weather was exceedingly hot there were no noxious smells. All the arrangements for treating the cattle were of a most merciful kind. There was no barking of dogs, no hallooing of men, no feverish excitement. An abundant supply of water for slushing was provided. There was no pawing with hot hands, and no bad meat was allowed to be sent away for sausages. Then the author, moralising upon all this, exclaimed How different was this to the manner in which they dealt with the roast beef of Old England in Newgate market! If Sir

Edmund had been with him (Lord Cathcart) on a recent occasion when he spent a whole night in Newgate market, he fancied he would have used language still more forcible and emphatic. Another remarkable circumstance which Sir Edmund Head did not refer to, but was mentioned in the *Journal of the Statistical Society*, was that the introduction of horse-flesh into Paris having been forbidden, a large contraband trade in it sprang up, which increased to such an extent that the authorities were at length obliged to legalise the introduction of horse-flesh for consumption as human food. Another important fact was this: that by the operation of the octroi duty the consumption of meat in Paris was correctly ascertained. This, however, could not be done in London; where there were no similar means for arriving at such knowledge. The information derived from this source in Paris showed that great fluctuations were experienced in the rate of consumption of meat in different years, which was to be traced probably to fluctuations in the general trade of the country, and in the command which the people possessed over the necessaries of life and matters of that kind. But whatever might be the cause, there was no doubt that the consumption of meat in the large towns of France was subject to extreme variations. It appeared from the *Journal of the Statistical Society* that the consumption in Paris during the year 1847 was 150lbs. of meat per head of the population, exclusive of game and poultry; in 1848, it was 87¾lbs.; in 1849 it was 140lbs.; and in 1850 it was 158lbs. These figures exhibited a very considerable fluctuation in the consumption of animal food; but if the mass consumed were taken, instead of the rate per head of the population, the fluctuation would appear to be still greater. Most members of Parliament, he presumed, had received a copy of an interesting pamphlet relating to city improvements. By the map which was appended to that pamphlet, it would be seen that the new arrangements for the proposed metropolitan dead-meat market at Smithfield were as convenient as they could well be made. There would still, however, be the blockading difficulty. Nevertheless, it was so important to have a central market, that whatever the difficulties and drawbacks, they would be of much less consequence than the evil attendant upon having several markets distributed over the town. On this point he spoke with great reserve in the presence of Mr. Holland, who was at that time engaged in conducting an important inquiry into this very subject, which would doubtless conduce much to improvements. He hoped, however, that the parties would hurry on as fast as they could the completion of the metropolitan meat market; and if they did not at present feel inclined to do that, then he would recommend them to follow his example and spend a night in Newgate-market, which he thought might act as a spur to their languid energies, and prompt them to use a little more expedition in the matter. In drawing these remarks to a close, he would only further refer to the important recommendation contained in the concluding portion of the third and last report of the Cattle Plague Commissioners. From all he had observed, he was convinced that that recommendation was perfectly right: it was one to which, therefore, he gave his hearty concurrence. They said that now was the time to carry out the changes which were required in the supply of meat to large towns; when great alterations might be made without being attended by anticipated inconveniences; and it might be considered whether slaughterhouses should not be transferred from towns to suburban points on lines of railway, to the ultimate benefit of both customer and butcher. Then they ended by saying that the cattle plague, though in itself a great calamity, had undoubtedly put a stop to much that was cruel and pernicious; and they hoped, as all hoped, that that happy state of things might be lasting.

Mr. **Frere** said: A fact had been mentioned to him by a leading grazier, which he could not understand. A large Norfolk grazier, told that gentleman that in the spring he could only make 4s. 2d. per stone by meat which was brought up to London dead, while meat of the same quality in the London live-meat market would readily have made 6s. per stone. He (Mr. Frere) should like to know whether that difference of value arose from the nature of the case or from the tradition with regard to meat.

Mr. **Holland**, M.P., observed that it must be a result of the change of system.

Mr. **Frere** said the impression which he received from what that gentleman said was, not that farmers were likely to slaughter on their own farms, but that abattoirs would be established in the environs of London, and animals would at all events travel to the vicinity of railway stations, on their own legs.

Mr. **Holland**, M.P., reverting to the fact alluded to by Mr. Frere, namely, the variation of price as between one kind of meat and another, repeated his belief that it depended on the change of system. No doubt, however, in course of time —when the dead-meat market had been thoroughly established, and when, as the noble Earl who had just spoken anticipated would soon be the case, a system of telegraphic arrangements had been established, by means of which it would be ascertained how much meat was required in a certain district or for a certain population, all these questions would be set right. He should have liked very much to enter into several points involved in the subject; but, as the noble Earl had remarked, a committee, of which he (Mr. Holland) was a member, was at that moment prosecuting its inquiries. It was a committee to consider the trade in animals—not only foreign, but home animals also—the question of quarantine, the mode in which animals were brought into this country, and the mode of their transit from place to place; and he regretted that they had not in Parliament the valuable assistance of their chairman (Mr. Thompson) on that committee. It would very inconvenient and contrary to rule for a member of a parliamentary committee to state to a meeting, or in any way to make use of the evidence taken by that committee, before the inquiry was closed and the report made; and he therefore felt his mouth to be closed as regarded any information which he might otherwise have given on the subject. He could only say that he believed the results of the inquiry would be most valuable—that people would be astonished to see with what facilities a change might be made as regarded the feeding of a large population from one system to another; the new system being, too, far more efficient, far more effectual, far more valuable, far more healthy, and far more civilised than the old one (Hear, hear).

Sir J. **Johnstone**, M.P., fully believed that telegraphy would settle many difficulties connected with the meat market. As an illustration of the working of that system, he might mention that a day or two ago an epicure went at 5 o'clock to Charles' (the fishmonger's) to secure a fresh salmon. The fishmonger told him he had come at an extraordinary moment, for he had just received a telegram from Worcester stating that a salmon which had just been caught left Worcester by the 2 o'clock train. The result was that a fine salmon arrived in time for the epicure's dinner.

The **Chairman**, in summing-up the discussion, said: Lord Cathcart had alluded to the charges made by railway companies for the conveyance of dead-meat since the breaking-out of the cattle-plague. Now he (the chairman) thought that a great deal of what had been said in the way of complaint on that subject was due to a want of consideration of the difference between a wholesale trade and a retail one. They might rest assured that their northern brethren very well understood their own interest, and that if the farmers and cattle-dealers of Aberdeenshire and the districts around were satisfied with the cattle-traffic by railway, both as regarded the charges made for conveyance and the state of the meat when it reached its destination, there could be no great reason for complaint. It might fairly be assumed, he thought, that after a time the charges for the conveyance of dead-meat would not be such as to prevent the trade from being properly carried on. At present a man compared the charge for conveying a live animal with the charge for conveying a dead animal. He forgot that when animals were conveyed alive there were eight or ten in the same truck; whereas, under the existing state of things, the railway company had to convey one carcase, or it might be a quarter of a carcase. It would be impossible for the company to provide carrying-power for so small a quantity, sent to a station as it were hap-hazard, or to charge the same in proportion, for such a quantity, as was charged when a whole truck was hired and as many cattle were put into it as it would contain. It was not fair, he repeated, to compare retail with wholesale charges; but he might remark, that if it should be found necessary in order to supply the wants of the country that dead meat should be conveyed on a largely-increased scale, the charges would no doubt be adjusted to the altered state of things. Farmers would soon find out how to obtain the benefit of wholesale charges. He, for one, felt much obliged to the gentlemen who had taken part in the discussion. Lord Cathcart seemed to have collected a great deal of information on several points which might be usefully discussed; and no doubt both his lordship's remarks and those of Mr. Herbert would be published in the Society's *Journal*.

A vote of thanks was accorded to Mr. Herbert, and the meeting then separated.

MONTHLY COUNCIL: Wednesday, June 6, 1866.—Present—Lord Tredegar, President, in the Chair; the Earl of Shrewsbury, the Earl of Powis, Lord Berners, Lord Feversham, Lord Portman, Lord Walsingham, Major-General the Hon. A. N. Hood, Sir Watkin W. Wynn, Bart., M.P., Mr. Barnett, Mr. Bowly, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P., Mr. Hutton, Mr. Jonas, Colonel Kingscote, M.P., Mr. Lawes, Mr. Lawrence, Mr. Robert Smith, Mr. H. S. Thompson, Mr. Torr, Sir T. Western, Bart., M.P., Mr. Wells, Mr. Jacob Wilson, Mr. Frere, and Dr. Voelcker.

The following new members were elected:

Aldous, James Arthur, Lingwood, Norwich.
Alexander, Wm. Lancaster, Shatton Lodge, Cockermouth.
Ball, William, Rothwell, Kettering.
Carson, James, Spinfield, Great Marlow.
Cheesman, Frederick, Little Chart, Ashford, Kent.
Dayman, Rev. Albert, Albert College, Framlingham.
Patterson, Henry, Normanton Hill, Loughborough.
Piggott, Fraser, Fitzhall, Midhurst, Sussex.
Robbins, Harry, Northfield Farm, Witney, Oxon.
Walker, James Robert, Sandhutton, York.

FINANCES.—Major-General the Hon. A. N. Hood presented the report of the Committee, from which it appeared that the Secretary's receipts during the past month had been examined by the Committee, and by Messrs. Quilter, Ball, and Co., the Society's accountants, and were found correct. The balance in the hands of the bankers on May 31 was £2,258 13s. 10d., against which cheques were drawn for £923 19s. 5d.

DISCUSSIONS. — The following arrangements for the weekly meetings of the Council were announced: Wednesday, June 13, "Cattle Statistics and Cattle Insurance," to be opened by Dr. Farr; Wednesday, June 20, "How far in certain districts Sheep Stock may be advantageously substituted for Cattle," to be opened by Mr. Torr.

THE ROYAL VETERINARY COLLEGE.

ANNUAL REPORT OF THE GOVERNORS TO THE COUNCIL OF THE ROYAL AGRICULTURAL SOCIETY.

[Extending to the 31st December, 1865, and received by the Society on the 26th May, 1866.]

Since their last annual report, the governors of the Royal Veterinary College have observed with deep solicitude the cloud which has gathered over the prospects of the agriculturists of this country through the outbreak of the cattle plague, and they sympathise with the Council in lamenting this national calamity. Before, however, referring in a more especial manner to this subject, they would direct the attention of the Council to some matters of importance, but of more special interest as connected with the alliance between the two institutions.

The governors have seen with much satisfaction that their efforts to render the College increasingly useful to the agricultural community have met with a ready response, and that the members of the Society and agriculturists generally have co-operated with the veterinary profession in furnishing to the institution a largely-increased number of morbid specimens, and by communications relating to disease in cattle, sheep, and pigs. Every opportunity has been taken by the professors of utilising these for the benefit of the pupils. Agriculturists from all parts of the country have visited the College to obtain information relative to the diseases of their cattle, and have acknowledged the benefit they have derived from the advice which has been given.

The lectures, pathological demonstrations, and clinical instructions have been regularly pursued; and the attention of the pupils to these branches of their studies has been such as to give the greatest satisfaction to the professors. Compared with the preceding and many other years, the number of the pupils has increased—a fact which augurs well for the future, especially when it is borne in mind that the governors, with the view to raise the general tone of the profession, had determined that each pupil should undergo a matriculatory examination.

The number of pupils who entered the classes during the year is 63; and of those, the number who passed the examination of the Royal College of Veterinary Surgeons is 37.

No material alteration has been made in the system of education which has hitherto been found to work so well. The same number of lectures have been regularly delivered; and the students have been required to devote their time and attention fully to their studies, including as these do, besides cattle pathology, the anatomy, physiology, and pathology of the horse, veterinary surgery, chemistry, materia medica, toxicology, &c.

Provision is made for examinations, and for the reading of essays and discussion of medical subjects by the pupils themselves at the weekly meetings of the Veterinary Medical Association.

A gradual increase in the number of qualified practitioners is thus provided to meet the requirements of stock owners. The location of veterinary surgeons in districts hitherto occupied by farriers cannot fail to be of great advantage to the country by the bringing of medical science into daily operation, as applied to the diseases of all domesticated animals.

Apart from the cattle plague, disease has not been very rife among bovine animals. The epizootic affections known as the mouth-and-foot disease and the lung disease, with which we have long been familiar, have prevailed in some districts, but not in a very malignant form. The losses have consequently been fewer from the latter malady than heretofore, since the disease has been more amenable to medicinal treatment and agents.

Owing to the short hay crop, and the almost total failure of the turnip crop in 1864, having been followed by a long winter and cold spring, farmers experienced the greatest difficulty in providing sufficient keep for thei stock; many animals, particularly young sheep, suffere severely. Numerous deaths consequently took place fro diseases traceable to ungenial weather and insufficien nutriment. Among the deaths from these causes wer several singular cases of poisoning, arising from the animals browsing upon some of the evergreen trees an shrubs. In different parts of the country numerous cattl were lost from feeding on yew; as many as forty deer ar said to have died in the Duke of Beaufort's park at Badminton, from this cause—the boughs of the yew tree having been brought within their reach by the weight the snow. Three flocks of sheep are also recorded having been poisoned by eating the leaves of the rhododendron ponticum. One of these cases occurred in Hampshire, the second in Kent, and the third in Berkshir Among other sources of injury to cattle, one of a ver exceptional character may be mentioned—the poisonin of a considerable number of animals by being pastured i fields in which rifle butts are erected; a lead-spray fro the bullets, smashed against the targets, was taken up wit the grass, and has been found to have lain in th stomachs of these animals for many weeks, undergoin solution in the gastric and intestinal juices, and to hav thus destroyed the animals by a process of slo poisoning.

Facts of this kind cannot be too extensively known among farmers, in order to the prevention of a recurrence of the mischief arising from them.

In the month of June the small-pox of sheep suddenly made its appearance among a flock of ewes and lambs on the Sussex Downs, near to Newhaven, and as no foreign sheep had been imported at Newhaven, or had been known to have been in the neighbourhood, the origin of the disease could not be fully ascertained; it was probably occasioned by the large importations of foreign wool which were then taking place into the port of Newhaven. Much of this wool on arrival was found to be packed in torn bags, and consequently portions of it were often scattered about. The sheep affected by the disease were, at the time of their infection, in pasture-grounds by the side of the railway, and were thus exposed to the probability of infection from this cause. By some persons, however, the outbreak is believed to be traceable to the fact that an infected sheep had been thrown overboard from an importing vessel, the body of which had floated up the river. A drowned sheep was found, but there is no evidence to show how it came into the river, or whether it was affected with the disease.

Every information was received of the outbreak, and every precaution was adopted under the personal superintendence of the professor of cattle pathology to prevent the spread of the malady, and lessen its devastating effects. Two flocks only were attacked, and although these numbered nearly 1,000 sheep, only about 100 of them were lost.

The great event of the year has undoubtedly been the outbreak of the cattle plague. This terrible disease was first observed in the London dairies on June 27th, but its true nature was not suspected. On July 4th it was recognised by Professor Simonds, who was then consulted by the veterinary surgeon in attendance, and immediately brought the matter to the knowledge of the Government. From that time the disease continued to spread, and reached such fearful proportions as to require the enactment of the most stringent legislative measures.

The officers of this College have been unremitting in their efforts to assist in arresting the progress of the disease, and from the very commencement have applied themselves early and late to the adoption of means likely to be of service. The Governors considered that exertion to meet this emergency was the primary duty of this Institution, and that no reasonable expense should be spared in search of remedies, if such should be discoverable, at all events in the recommendation of methods for preventing the extension of the disease. With this view they erected a number of loose boxes, in a separate yard, and afforded means to keep up a continued supply of plague-stricken animals for treatment and experiment.

It cannot be said that any marked success has yet attended the medical treatment, still the experience which has been gained of the pathology of the disease is considerable, and the knowledge thus propagated has been of great value in arresting the progress of this murrain.

Many questions in connexion with the pathology of cattle-plague and the liability of its extension to other animals have been warmly debated, and none more so than the susceptibility of sheep to infection. To remove all doubt on this point a series of experiments was adopted at the College, some results of which the Governors subjoin, as extracted from the Report made by Prof. Varnell and Assistant Prof. Pritchard to the Royal Commission.

EXPERIMENTS WITH SHEEP.

October 14.—One sheep (a hogget) was inoculated with matter taken from the eye of an ox affected with the plague. On the 20th it showed marked symptoms of the disease, and died on the 23rd. No treatment.

October 14.—One sheep (a hogget) was inoculated with matter taken from the nostrils of one of Mr. Harvey's sheep from Crown Point, Norwich. On the 20th it showed well-marked signs of the disease, and died on the 23rd. No treatment.

October 14.—One sheep (a hogget) was inoculated with matter taken from the nose of the same sheep as in No. 2, and on the 20th it evinced symptoms of the disease. It died on the 30th. This sheep was submitted to treatment.

October 14.—One sheep (a hogget) was inoculated with matter taken from the eye of an ox affected with the plague. This sheep was submitted to treatment and recovered.

October 19.—Two sheep (hoggets) were placed in a shed with a cow affected with the plague. On the 23rd both sheep became affected with the disease, and on the 31st they died. No treatment.

October 6.—Two sheep (hoggets) were placed in a shed, in which a cow had died the day before from the plague. The disease did not declare itself in these two sheep until the 26th. One of them died on the 30th, and the other lingered on until the 19th of November.

November 14.—One sheep (hogget) was inoculated with matter taken from the vagina of a cow labouring under the plague. It died on the 15th, about twenty-four hours after being inoculated. It can hardly be imagined that this sheep died from the effects of the disease through inoculation; yet it is remarkable that every part of the mucous tracts, both alimentary and respiratory, indicated faint blushes of redness precisely in those places in which they are almost invariably found in true cases of cattle plague. The sheep had been suffering from diarrhœa for some time previously, but had quite recovered, and at the time it was inoculated appeared to be very healthy.

These experiments must be considered not only as proving the liability of sheep to cattle plague, but also as establishing the fact of the ready transmission of the disease from sheep to cattle and from cattle to sheep. Other experiments were also adopted, having for their object the elucidation of other points in connection with the pathology of the plague. These are extracted from the same report.

EXPERIMENTS UPON CATTLE.

No. 1.—The first case of cattle plague admitted into the College Infirmary was on the 13th of July. The cow was brought from Mrs. Nichol's dairy at Islington, and exhibited well-marked symptoms of the disease. No treatment was adopted, and she died on the 17th. When this cow was first brought to the college she was placed in an open loose box, and, as an experiment, the first tried, a healthy cow was placed with her in the same box. The second cow took the disease, from which she died.

No. 2. September 23.—A black and white calf about four months old was placed in a box with a sheep, which the day before had been in contact with a cow affected with the cattle plague. On the 8th of October the calf showed symptoms of having the disease in a very serious form, and on the 10th it died. No treatment was tried in this case.

No. 3, October 21.—A red and white calf about five months old was placed in a shed with four sheep which had taken the disease from inoculation. On the 27th the calf showed symptoms of having taken the disease. On the 31st it died.

No. 4. October 20.—A black and white heifer about two years old was inoculated with the virus taken from the nostrils of a cow affected with the plague. No effect.

November 14th.—Inoculated the same heifer with matter taken from the nostrils of a Dutch cow labouring under the disease in a very intense degree. No effect.

This heifer has resisted the effects of both inoculation and exposure to infection up to the present time, viz., December 25.

No. 5. October 20.—A black and white Dutch cow, which had recovered from a mild attack of the disease, was inoculated with matter taken from the nostrils of a cow affected with cattle plague. No effect.

No. 6. December 6.—A red calf about five months old was inoculated with matter taken from the eye of a cow labouring under cattle plague. On the 11th, being the fifth day after inoculation, symptoms of the disease were manifest. It died on the 15th. This case was treated.

No. 7. December 6.—Inoculated a red calf about five months old with matter taken from the eye of a cow affected with the plague. On the 12th, *i.e.*, six days after the inoculation, it showed symptoms of the disease, and died on the 17th. This case was treated.

No. 8. December 11.—A red and white calf, about six months old, was placed in an infected box in which a cow had died the day before. On the 18th it showed symptoms of the disease, and died on the 22nd. This calf was put under treatment.

CASES THAT HAVE PROVED FATAL.

No. 1. August 31, 1865: Cow, aged 5 years.—Therapeutic Treatment: Brandy and opium in full doses; occasionally saline laxatives as eliminatives; a mixture of oil and turpentine was used as a counter-irritant to the under-surface of the abdomen.—Remarks: This cow lived 17 days after she was admitted. On the 11th day we thought she was recovering. On the day following she was attacked with the foot-and-mouth disease, which caused so much irritation that she gradually became worse, and died on the 17th of September. This cow had chronic disease of the lungs.

2. Aug. 28: Dutch Cow, 5 years.—Stimulants such as brandy and carbonate of ammonia three times a day; good supply of nourishing food; skin well cleansed.—The symptoms in this were not very intense when the cow was first admitted, but they rapidly became worse, and she died on the 1st of September.

3. Sept. 7: Dutch Cow, 6 years.—This cow was treated chiefly with strong ale, which was given her in gruel four times in the day. The cow was slaughtered on the 9th for post mortem examination, so that the effects of treatment are imperfectly known.—Up to the time, however, of the animal being killed, it appeared to derive no benefit from treatment.

4. Sept. 27: English Cow, 4 years.—Solution of acetate of ammonia and chloric ether twice a day; gruel four times a day; the skin well cleansed.—This cow did not show any severe symptoms until the 29th; indeed, we anticipated some benefit from treatment, but on the evening of the same day she became worse, and died on the 2nd of October.

5. Oct. 1: English Cow, 4 years.—Linseed oil and oil of turpentine in gruel every twelve hours; good oatmeal gruel four times a day.—This plan of treatment was recommended, but it proved of no avail. The cow rapidly became worse, and died on the 4th of October.

6. Oct. 4: Dutch Cow, 5 years.—Diffusible stimulants and sedatives every eight hours; the greatest attention paid to the animal's comforts; ¼ lb. doses of charcoal in gruel twice daily on the fourth day.—This cow lived eight days; on the third day her symptoms were favourable; but on the fourth diarrhœa, attended with much fœtor, commenced, and emphysema appeared on the loins. From this time she rapidly became worse, and died on the 12th of October.

7. Oct. 21: Cow, 7 years.—Well clothed the body after having first cleansed the skin; free supply of the oatmeal gruel and sulphate of copper and brandy every eight hours.—This cow rapidly became worse from the day it was admitted; the loins of the animal were emphysematous: she had profuse diarrhœa, and died on the 24th of October.

8. Oct. 22: English Cow, 5 years.—Hay or bran tea as much as the patient would take; brandy and sulphate of copper every eight hours; gruel every four hours.—In addition to this animal being dosed with medicine, she was made to inhale the vapour of warm water twice a day, and the vapour of vinegar twice a day. This treatment had no appreciable beneficial effect. The patient died on the 25th of October.

9. Oct. 22: Shorthorn Cow, 4 years.—Diffusible stimulants and saline laxatives; opium was given to check the diarrhœa when it was present.—This cow had the usual good nursing, but she died on the 25th of October.

10. Oct. 22: Shorthorn cow, 4 years.—Chlorate of potash three times a day; opium occasionally to check diarrhœa.—The disease in this case ran its course so rapidly that the animal died on the 24th, *i.e.*, two days after being admitted.

11. Oct. 23: English Cow, 6 years.—This case was placed in a vapour bath for one hour, after which she had solution of acetate of ammonia, carbonate of ammonia, and spirits of nitric ether; when the cow had been in a bath an hour, rubbed dry, and well clothed, diffusible stimulants were given; no good effects were observed to follow this treatment; on the 24th stimulants and vapour bath as before, also gruel, and attendance to general comforts.—No benefit whatever seemed to attend the treatment; indeed, we thought it rather tended to hurry the disease to its fatal termination; the animal died on the 26th of October.

12. Oct. 23: English Cow, 5 years.—Skin well cleaned: body well clothed; thin gruel; hay or bran tea; chlorate of potash twice a day.—The course of this disease was rapid; profuse diarrhœa from the first, accompanied by very offensive evacuations streaked with blood. The patient died on the 25th of October.

13. Oct. 23; English Cow, 4 years.—Skin well cleaned; body well clothed; gruel four times a day; chlorate of potash; opium to check diarhœa.—This cow succumbed to the disease very quickly, viz., on the following day (October 24th).

14. Oct. 28: Shorthorn Cow, 5 years.—Cleansed the skin, clothed the body, and gave brandy with opium in full doses twice during the day; chlorate of potash in drinking water next day (29th); gave nitro-hydrochloric acid, tincture of chinchona in water three times in the day; hay tea to drink.—On the 30th the diarrhœa ceased to be so profuse and the evacuations so offensive as they were at first, but in other respects the patient was evidently worse. She died on the 31st of October.

15. Oct. 28: Shorthorn Cow, 6 years.—Solution of acetate of ammonia, carbonate of ammonia, and spirits of nitric ether in full doses; opium to check diarrhœa.—This cow died on the 1st of November.

16. Oct. 28: English Bull, 2½ years.—Good nursing; the early treatment consisted in giving saline laxatives combined with diaphoretics repeated every four hours, keeping the body well clothed, and frequently giving thin gruel; hot vapour bath for nearly two hours, after which he had a diffusive stimulant, and his body well rubbed and thickly clothed.—There was profuse diarrhœa; this bull died on the 31st. The treatment produced no change in the symptoms; the disease ran its course rapidly.

17. Nov. 3: English Cow, 6 years.—Saline laxatives with diaphoretic agents every eight hours; clothed the body, and administered linseed gruel; injected opium with starch gruel per rectum; this treatment was continued.—The symptoms when the patient was first admitted indicated a mild attack, but the cow rapidly became worse, and died on the 6th of November.

18. Nov. 3: English Cow, 6 years.—Treated in same manner as the last.—The cow died on the 6th of November.

19. Nov. 3: Brittany Cow, 4 years.—Diffusible stimulants three times a day; opium three times a day to check diarrhœa; body well clothed.—The symptoms in this little cow were very intense from the first; she died on the 6th of November.

20. Nov. 3: Calf, 4 months.—Bicarbonate of potash, tincture of chinchona, and tincture of gentian three times a day; thin gruel three times a day; hay tea to drink; the box in which this calf was placed was fumigated with burnt tar.—This calf contracted the disease in consequence of its being placed in a box in which a cow had died the day before. Symptoms of the disease were observed on the fourth day, and the animal died on the seventh day. The affection ran its course without being checked in the slightest degree. It may be mentioned that for one month the calf was within 40 yards of infected animals, and the man who attended to the cattle affected with plague was daily in the box with the calf. It was not, however, until it was placed in a decidedly infected shed that it took the disease.

21. Nov. 3: Calf, 6 months.—Treated in nearly the same manner as the last case; opium in enemas to check diarrhœa; tincture of gentian mixed with ale and gruel during the latter stages of illness to support the animal's system.—This calf lived until the 11th, a longer period than usual; still, during its illness, no hopes of recovery were at any time entertained.

22. Nov. 3: Heifer, 8 months.—Same treatment as in the last cases.—Died on the 8th December. The progress of th disease in this case was not remarkably rapid, but it advance steadily in spite of our treatment.

23 and 24. Nov. 4: Calves, 4 months.—Good nursing chlorate of potash twice a day.—These calves exhibited all t usual symptoms, and although they were well nursed, the died on the 7th.

25. Nov. 13: Dutch Cow, 6 years.—Saline laxative chlorate of potash in drinking-water.—No diarrhœa, but t fever was intense at the onset. She lived much longer th we expected, for although the progress of the disease w comparatively slow, there were no favourable sympto noticed from the first. The animal died on the 21st.

26, 27, 28, and 29. Nov. 13: English Cows, 4, 6, 5, and years.—These four cows were all treated in the same way far as medicine is concerned; nitre, hydrochloric acid and i fusion of cascarilla bark three times a day; aromatic spiri of ammonia once a day; ale or stout twice a day; eve attention paid to clothing and general comforts—One of the cows died on the 15th, one on the 16th, one on the 18th, a the other on the 21st. These cases were treated precisely the same plan as that which is said to have been so success with the veterinary surgeon near Windsor. With us, however, it has been a complete failure.

30, 31, and 32. Nov. 14: English Cows, 3, 5, and 6 years. Two ounces sulphate of soda, followed by one ounce dos every eight hours; injection of opium in thin starch wh the purging became profuse.—One of these cows died on th 15th, one on the 16th, and one on the 17th. The medicine these cases seemed to have no control over the disease, whi ran its course in all these animals with great rapidity.

33. Dec. 11; 34. Dec. 12: Calves, 4 months.—These tw calves were both treated with sulphite of soda, and go nursing was enforced.—These calves took the disease

inoculation. These patients, when first attacked, were constipated, but on the second day their bowels became relaxed, from, we believe, the effects of the medicine. No fœtor attended the purging. One of these calves died on the 15th, and the other on the 17th.

35. Dec. 18: Calf, 5 months.—This calf was also treated with sulphite of soda.—This calf contracted the disease by being placed in an infected box. It rapidly became worse, and died on the 22nd. Before death the purging was profuse, but not fœtid.

TREATMENT BY HYDROPATHY.

About the middle of September, two cows affected with the cattle plague were treated on the following plan:—

No. 1.—After the body had been well douched with cold water, the animal was immediately wrapped in wet sheets, over which dry clothing was placed, and the whole closely secured by bandages. Even before the operation was completed the cow became partially unconscious, and lay down, in which position she remained for half an hour. In a short time her skin became quite warm, after which she again stood up for about an hour, when it was found that considerable perspiration was produced. The wrappers were now removed, her body well rubbed, and again completely covered with dry rugs. Some gruel was also given her, and in about half an hour the following draught was administered: Tincture of opium one ounce, tincture of camphor one ounce, water one ounce.

On the following day the symptoms were much aggravated. The douche and wet sheets were again used, with nearly the same effects as before. The medicine was also repeated. From this period the cow rapidly became worse, and died on the third day after her admission.

No. 2.—The results of treatment in this case were similar to those in No. 1, and need not be repeated. These cases were the only ones treated on the hydropathic principle, and although the termination was not satisfactory, we are nevertheless inclined to think that a modified form of this treatment might prove to be advantageous.

CASES THAT HAVE RECOVERED.

No. 1. Italian Cow.—A large Italian cow in good condition was admitted into the Infirmary, affected with the cattle plague. The symptoms were not intense, but they were well marked. The treatment consisted of saline laxative and diuretic medicines, with a free use of the bicarbonate of potash. As soon as the fever subsided she had some diffusible stimulants. Light succulent food was allowed her, and her body was well clothed.

No. 2. A Dutch Cow.—A very mild case; still the symtoms were sufficiently defined to enable the Inspector who sent her to the College to assert that she was affected with the plague. The secretion of milk was suspended, she refused her food, the lining membrane of the vulva was heightened in colour, and she had diarrhœa. Some saline medicine, and afterwards brandy, was given in gruel. On the third day after admission the cow gave evidence of returning health, but in about a week or ten days from this time the joints of her hind limbs, particularly of one limb, became inflamed. The treatment consisted in the exhibition of mild laxatives, and the application of fomentations to the inflamed joints. A week after being thus treated she was so far recovered that she was returned to her owner.

No. 3. A Dutch Cow.—This case was sent to the College by an inspector as a case of cattle plague. The symptoms were very slight; saline laxative medicine, succulent food, and the usual good nursing, was all the treatment she received. In a week from the time of her being admitted she was convalescent. This cow came into the infirmary in September, and still remains there. She has been exposed to the influence of infection from all the cows that have since been in the College, and has also been twice inoculated with the matter taken from cows affected with the plague in its most virulent form, but has completely resisted the influence of both.

No. 4. Dutch Cow.—This case was considered by the inspector to be a very mild one. On arrival at the Infirmary we noticed that the animal had diarrhœa. The colour of the mucous membrane was heightened; the secretion of milk was arrested, but she did not wholly refuse her food. Some medicine forwarded to the College from the Continent was given her. We are not aware of what it consisted, or whether it exerted any power in arresting the progress of the disease. At any rate the cow recovered, as we in fact anticipated would be the case from the first.

Among other experiments to test the value of prophylactic agents the following were had recourse to: Two young heifers were made to take daily doses of three ounces of sulphite of soda in the water given them to drink. Five days from the commencement of their taking the agent one of them contracted cattle plague, and died on the third day afterwards. The second also fell ill with the plague after taking the sulphite for 10 days, and speedily sank from the attack.

Some experiments of vaccinating cattle were likewise adopted. The particulars of some of these are given in an addendum to the Report before alluded to, and here transcribed in full. They are thus described by Professor Varnell: "Being desirous that the experiments of vaccination and counter proofs should be efficiently carried out, I invited the co-operation of Professor Simonds, believing, and I trust correctly so, that the conclusions we should arrive at would be of greater value in the estimation of the public than if simply conducted by myself. I may further add that Professor Simonds was the more desirous of assisting me, since it is his special province in the Veterinary College to investigate the diseases of cattle."

For the purpose of ascertaining the value of vaccination in cattle plague, an opportunity we did not expect offered itself, through which we were enabled to obtain two successfully vaccinated cattle.

W. Acton, Esq., M.R.C.S., with his usual desire to facilitate inquiries into the nature of the diseases of the lower animals, immediately on the subject of vaccination being mooted, at once consented to vaccinate all the bovine animals on his farm. For this purpose we procured for his use a sufficient number of freshly-charged points from the National Vaccine Institution.

On the 7th of January he vaccinated 17 animals of various ages. Of this number seven only took; some of them, however, were more effectually vaccinated than the rest. Two of the seven animals were selected by Mr. Acton and sent to the College for further experiments. One of these was an Alderney cow giving a fair amount of milk. She had three well-marked vesicles on the vulva, two on one side and one on the other. The other animal was a half-bred Alderney heifer. She had but one vesicle on the vulva; still she was considered to be effectually vaccinated. On her arrival at the College a crust had begun to form over the seat of the puncture.

No animals could have been more suitable for the experiments we required than were these two. They had come from a farm quite free from the cattle plague, and were vaccinated by Mr. Acton himself.

EXPERIMENTS.

No. 1. January 8.—A healthy "bud," about six months old, was vaccinated with some vaccine lymph taken from the arm of a child. No effect.

No. 2. January 8.—A healthy "bud," about five or six months old, was vaccinated with vaccine lymph as above. In this case it took on the fifth day. There was a blush of redness around three of the punctures, viz., two on one side of the vulva and one on the other, and the skin was slightly tumefied. On the ninth day the tumefaction and redness had increased and imperfect vesicles formed, after which the punctures scabbed over, and the usual characteristic phenomena followed. On the 7th of February, thirty days after vaccination, this "bud," although not purposely exposed, became affected with the cattle-plague, and died on the 11th, four days after the disease had declared itself.

No. 3. January 20.—The Alderney cow which had been vaccinated by Mr. Acton, and had now recovered, was placed for twenty hours in a loose box with a "bud" affected with cattle-plague. On the 26th the cow showed symptoms of the plague, but in a milder form than usual. On the third day, however, after the disease had declared itself, it assumed the usual severity, and on the 2nd of February the cow died.

No. 4. January 20.—The black-and-white half-bred Alderney heifer, also successfully vaccinated by Mr. Acton, was inoculated with matter taken from the eye of the "bud" alluded to in No. 3. On the 25th this heifer showed premonitory symptoms of the plague, which on the 26th became well marked. This case was unusually severe, the disease ran its course very quickly, and the heifer died on the 30th.

INOCULATION WITH RINDERPEST VIRUS FROM A SHEEP.

No. 5. January 13.—Inoculated a "bud" about five months old with matter taken from the eye of a sheep affected with the plague; this matter being diluted with six times its weight of milk was, by means of a few threads of wool, placed under the skin, on one side of the vulva. On the 18th the animal showed symptoms of the plague. On the 20th it was placed in a box with the heifer No. 3, and on the 21st it died.

INOCULATION WITH HUMAN VARIOLA.

No. 6. January 7.—A healthy "bud," about five months old, was inoculated on each side of the vulva by three punctures, and scarifications with lymph taken from a man affected with small-pox. No effect.

No. 7. January 7.—A healthy "bud," six months old, was inoculated with lymph taken from a man affected with small-pox, the same as above. No effect.

Note.—The "buds" Nos. 5, 6, and 7 were all re-vaccinated with lymph, taken from vesicles on the vulva of the Alderney cow of Mr. Acton, but without any effect in either instance.

Although the experiments instituted by us on vaccination are but few, still we feel that they conclusively prove the inefficiency of vaccination as a preventive against cattle-plague. The poison of this disease being received into the system after vaccination, both by direct inoculation and also by infection, seems to have produced its effects with as much intensity and certainty of destruction to life as though the animals had never been vaccinated at all.

The period of incubation, the symptoms, mode of death, and the *post mortem* appearances were the same in character as those we have so often witnessed.

(Signed) GEORGE VARNELL.

The Governors have entered into the foregoing details of some of the attempts to treat the cattle plague, and of some experiments, in order to show to the Council of the Royal Agricultural Society, and to the Society generally, that although they were never sanguine that a remedy for this disease, when it has once possessed animals, would be discovered, since the information which they had received with respect to the malignity of this disease from the countries on the Continent, where it has been for years prevalent, forbid any confident anticipation of so fortunate a result, they have nevertheless encouraged persevering attempts to treat the disease, and experiments as to its nature, for three reasons—

1st, Because they consider it their duty to promote the advancement of veterinary science in all its departments.

2ndly, Because they considered it their duty to extend the knowledge of this disease among the veterinary profession throughout the United Kingdom, to the vast majority of whom it was inevitably unknown, owing to the freedom of this country from its ravages for more than one hundred years; and its last appearance having occurred when the study of veterinary science was in its infancy; and

3rdly, Because they considered it their duty to co-operate with the Royal Agricultural Society and with the Government by every means in their power towards informing the nation of the calamity which has befallen them, and in demonstrating the necessity for those prophylactic and preventive measures, upon the prompt resort to which the only reliable means of safety has been found.

The Governors felt that they had for the above purposes, or might furnish, means for testing the disease and the modes of treatment, whether prophylactic or preventive, which science or discovery might suggest, and of thus affording earlier opportunity for deciding which of these might be worthy of attention than could otherwise have been available.

The Governors have reason to believe that the exertions of the professors and officers of this Institution, aided by the most advanced and intelligent of the students, have largely contributed to these objects. They have every reason to be satisfied with the zeal, perseverance, and professional knowledge manifested by the professors and officers of the Institution under their guidance, and trust the same feeling prevails among the Council, whom they have the honour to address.

In conclusion, the Governors would express their hope that it may please the Great Disposer of events to mitigate the infliction of this calamity, and to permit the exertions which have been and are being made by the Royal Veterinary College, by the Royal Agricultural Society, by the Legislature, and by the Government, such a measure of success as may at no distant period relieve the agriculturists of this country and the nation from the loss and danger to which during the last eight months they have been exposed.—C. N. NEWDEGATE, chairman, May 23.

CHEMICAL.—Mr. Wells announced that the following papers are in course of preparation for the *Journal:* 1. Report of Visits, in conjunction with Mr. Coleman, to Mr. Ruck's Farm, in Wiltshire, and on the Improvement of the Grass-land there; 2. On Clover Experiments.

HOUSE.—Major-General the Hon. A. N. Hood reported that the Committee recommended that the wages of the porter (W. Mann) be increased to £1 3s. per week, for which sum he shall provide the necessary assistance in the house-work. With reference to a letter received from the Secretary, asking for increased accommodation for his family, the Committee recommended an improvement in the house, for which they will direct a plan, specification, and estimate to be prepared and laid before the Council. It appeared also desirable that an additional committee-room and a larger and more convenient council-room should be added, if practicable, for which plans and estimates should be prepared, and the Committee be empowered to take such steps as they may think requisite, and submit them to the further consideration of the Council in July. This report was adopted.

STEAM CULTIVATION.—Mr. Thompson reported th recommendations of the Committee: 1st. That the inspection shall commence as early in August as the state of th harvest will permit. 2nd. That, after due considerati of the 188 replies sent in to the first circular, it appea that three inspection committees will be required, a that each committee will be occupied for a month i visiting the selected farms. That each committee sha consist of three members, one of whom shall act a secretary and reporter. Members of Council shall b furnished by the Secretary with such information as sha enable them to join the inspection committees wh visiting their district.

The report of the United States Department of Ag culture on the rinderpest, forwarded by the Foreig Office, was received; and a letter from the Paris U versal Exhibition, 1867, requesting the Council, in co junction with the Royal Highland Society and the Roy Agricultural Society of Ireland, to undertake the duty allotting to the various manufacturers of agricultural im plements, machinery, &c., the space set apart by the Im perial Commission for this class of objects; to which t Council acceded, and nominated a committee consistin of Mr. Amos, Mr. Druce, Mr. Brandreth Gibbs, M Wren Hoskyns, Mr. Thompson, and Mr. Torr, to assi in carrying out the allotment.

INSURANCE OF LIVE STOCK.

At the weekly meeting of the Council and members of the Royal Agricultural Society of England, held at the Society's house, in Hanover Square, on Wednesday, June 13, Mr. Hutton, of Gate Burton, Gainsborough, in the chair, Dr. Wm. Farr, M.D., F.R.S., Chief Superintendent of the Statistical branch of the Registrar-General's Department, delivered a lecture on Cattle Statistics and Cattle Insurance.

Before the reading of the paper it was announced that Mr. William Picktree, of Chester-le-street, had gained the prize offered by the Council for an essay on "The Improvement of Waste Lands connected with Mines." Another competitor, who subscribed himself "Persevere," had, it was stated, been commended.

Dr. **Farr** said: England is not so much celebrated for its cereal crops, as for its fine stock of cattle. The bulls, oxen, cows in calf, and heifers, always please the people at the shows of the Royal Agricultural Society. Although the English farmer is little given to sentiment, he does take a just pride in the herd which he has bred or chosen with care, and feels their untimely death much more acutely than he would a deficiency of crop or the destruction of grain of equivalent value. There is another source of anxiety in cattle—while agricultural stock is insured against fire, the live stock of the kingdom in the hands of at least half a million owners, and worth upwards of 140 million pounds sterling, is, for reasons which I will shortly explain, nearly all uninsured against destruction by disease. If a rick is burnt down, its value is recovered from the insurance office; and farmers are not terrified even when surrounded by incendiary fires. Far otherwise is it when their live stock is in danger. They have then no such resource. And where perhaps their whole capital—a large portion of which may be in cattle—is invested on the farm, murrain is ruin. The landlord, too, when the live stock of his tenant is swept away, is often pretty much in the situation of a man who has let on lease a house uninsured and burnt down by accident. The news that the "hundreds of military cordons" which Professor Simonds told this society guarded the "western side of the German States" had been broken through, that rinderpest reached England in June last, that it was spreading and destroying whole herds of cattle in several counties, necessarily excited the liveliest alarm, which went on increasing until in January it was loudly proclaimed by high authorities that the whole of the cattle of the kingdom was about to perish. The consternation continued, and was felt in both Houses of Parliament. The first thing that was required under these circumstances appeared to me to be some measure to stop panic, to inspire confidence, to give time for the adoption of judicious measures for combating the plague, and to protect the stockowner from ruin by diffusing the loss equally over all the owners of property in cattle. This could be done evidently by a system of insurance. Upon looking carefully into the subject, I found, however, that no adequate data existed for determining the mortality of cattle either in ordinary or epizootic seasons. In England we had no account of the numbers of cattle in the country, nor could I find any trace of an attempt in England to determine the rates of mortality at different ages on a large scale from pleuro-pneumonia, foot-and-mouth disease, anthrax, or any of the other common or epizootic diseases. Upon the fullest consideration I came to the conclusion that neither local societies nor commercial companies could encounter the difficulties of the crisis; and that the only resource to be thought of, in the presence of the plague, was a system of national insurance. This notion gave rise to the paper which I shall have the honour to submit to the society. We have to-day in our hands for the first time an enumeration of the live stock of the United Kingdom. The Statistical Office of the Privy Council supplies useful weekly returns; the reports of the Royal Commission have thrown a flood of light on this remarkable plague; such measures are in operation for its extinction as have been recommended by the first authorities; and, finally, the attacks of rinderpest are every week subsiding. So that now it may appear possible to institute, under certain conditions, a system of voluntary, and therefore partial, insurance. I have sketched in outline a system of this kind, taking into account the existing organization in the counties for the slaughter of cattle. To bring the subject fairly before you, I must remind you that by the cattle plague return, week ending May 26, the disease has been reported, since its first appearance, in 25,968 farms, sheds, or other places, in which 438,681 cattle were found; so the average herd contained nearly 17 head of cattle (16.893); and on the improbable assumption that small and large herds were equally liable to attack, and applying this proportion to the 4,785,836 head enumerated in Great Britain, it may be inferred that the island contains at least 283,301 separate herds. So of 283,301 herds, 25,968 suffered more or less from plague; 257,333 sustained no reported loss. These numbers are in the proportion of 10 to 1; out of eleven, 10 herds have escaped, and one herd has been attacked. Eleven of these herds contain 186 beasts; and of the 17 beasts in the herd infected, 9 were attacked; of them 5 died, 3 were killed under the disease, and 1 recovered: 7 were unattacked, but 2 of the 7 were "slaughtered healthy" by way of precaution; thus leaving 5 alive unattacked, which, with the 1 recovering, gives 6 survivors out of the original herd of 17. This is an average case. Let us assume that the 11 farms form a parish under one landlord. Then a farmer might lose the whole of his stock by pleuro-pneumonia, or by rinderpest; and what, if uninsured, is his situation? He might appeal, after the loss, to the pity of his 10 neighbours, who, if he had lost £90 worth of stock, might replace it by giving him out of their charity £9 apiece.* Or he can appeal to his landlord. How different would be his position if he and his neighbours had paid 10s. a-head before the loss into an insurance fund, on which each member had a just and equal claim! He would get his £90 as a matter of right, on business principles. I should mention that probably more than double the above numbers of owners made returns of cattle, sheep, and pigs to the Inland Revenue surveyors; and that as small herds were less liable to attack than large herds, it is possible that the average herd may not exceed ten. Taking the head of cattle in Great Britain at 4,929,645 in ordinary times, it appears that rather more than 4 in 100 have died or have been killed on account of rinderpest. The proportion was 1 in 23. Of those treated to the end, 79 per cent. died, 21 recovered; and it may be inferred that if none of the cattle attacked had been killed, the loss then would have been 3.945 per cent., or very nearly 1 in 25 of all the cattle existing. It is certain that all the cases of rinderpest have not been reported in the small herds; and, upon the other hand, undoubtedly many deaths from other diseases figured in the returns, as the diagnosis of the disease was at first difficult. The returns give the nearest approximation we can get to the loss by rinderpest. The returned loss of cattle is 200,905; or, allowing for animals attacked and unaccounted for, about 210,000. At £10 a-head, this would make the total loss £2,100,000, which has fallen with cruel inequality on the heads of the cattle-owners. I have here some common instances. This loss has occurred in 11 months among 4,929,645 head of stock, which at £10 a-head are worth £49,296,450. It has been computed, upon very imperfect data, that a fourth part of the cattle are slaughtered or die every year, that is, that their mean lifetime is four years; and applying these proportions, about 1,232,417 head of cattle are killed every year. The mortality by disease in common years is guessed at 4 or 5 per cent. including calves; and, allowing for that, we have this account for the year ending May 1866:

Estimated numbers of home cattle killed for market	1,022,411
Killed by common diseases	200,000
Killed by rinderpest	210,000
Total	1,432,411

In the ordinary course, upon this assumption, the cattle stock of the country has been reduced by about 210,000 head, to be made up by importation. These estimates, as you are well aware, are conjectural, because, while our commercial statistics have been attended to for centuries, statistics of the great agricultural interest have been entirely neglected, to our now great confusion. The statements must, however, be true within certain limits, and suffice to show the magnitude of this great question of cattle insurance, to which I invite your attention. Remark one fact, that the loss of cattle in ordinary years is large, on the lowest computation. The loss of farm stock by fire does not probably exceed £1 10s. per £1,000 annually, and it is insured at the rate of £2 10s. per £1,000. If the loss of cattle by disease in ordinary is 4 per cent., the loss by disease must be £40 on every £1,000 of stock; and in the time of rinderpest £80 a-year, or 8 per cent. The cattle of a most delicate organization necessarily encounter greater danger from hundreds of causes than the danger to which agricultural stock is exposed from fire; and as the loss is unequally distributed, insurance is indispensably required in this matter, as well as in the other, for the security alike of landlord and tenant. It is right to add that, in addition to the direct loss of cattle which a certain number of owners have sustained, the whole of the cattle-owners of the country have been subjected to restrictions and interferences with the movement and sale and propagation of stock that can scarcely be estimated at a lower figure than the £2,100,000 of direct loss. It will be one of the advantages of insurance that some of the most vexatious of the restrictions may, on calm consideration, be safely remitted. The owners who have lost stock, when cattle can be insured, will be able to obtain advances of money which, under present circumstances, no capitalists will make.

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* Formerly, before fire insurance was invented, it was the established practice to make almost every considerable fire a case for an appeal *ad misericordiam*. Collections were made in the churches, of which our parochial archives, we are told, contain abundant proof. The appeals for relief became so frequent as to give rise to serious complaint. (J. Brown, *J. S. Society*, 1857.)

LIVE STOCK INSURANCE ON THE VOLUNTARY PRINCIPLE.

To establish a society on this principle, the following course may be pursued:

1. The noblemen and gentlemen interested in agriculture to subscribe to a guarantee fund, on the plan that was adopted at the Great Exhibition. And in a matter of this importance the Government to subscribe an equivalent amount; engaging at the same time to advance money for preliminary expenses, at a moderate rate of interest. The Guarantee Fund only to make advances on loan, and the subscriptions to be called for in instalments only in case of necessity. 2. It may be convenient to commence operations in London through a committee of management, to be nominated by the Royal Agricultural Society of England. Similar committees may be constituted in Scotland by the Highland and Agricultural Society of Scotland; in Ireland by the Royal Agricultural Improvement Society. Insurance is as much required in Ireland as in England, and I conceive that it is equally urgent in the present state of the cattle stock. 3. An appeal, to be forthwith addressed through the statistical department of the Privy Council, to all the principal stock-owners of the kingdom, requesting their concurrence in a system of strictly mutual insurance, to be upheld by the payment of adequate premiums. It would not be necessary at first to address the numerous and less intelligent small owners, as they would come in spontaneously when the system was fully established. The remaining stock-owners would then be requested to send in classified lists of their stock and of its value in prepared forms to the Statistical Department, where they would be duly classified in counties. 4. It is probable that a shilling a month would insure £10 on a healthy beast exposed to ordinary risks; and, under good arrangements, in any counties afflicted with future plagues of rinderpest and pneumonia, the premium would not exceed two shillings a month, and that only for a limited term. Power should be taken to adjust the rate periodically, so as to meet the reigning risk. There would thus be one common rate of premium, but the risk on milch cows in towns, and in infected and unhealthy districts, would be met by equitable additions to the ordinary premium. 5. Stocks might be classed according to insurable value and risk, so as to insure a specified sum per head on each class. 6. The general terms of insurance being submitted to owners who had sent in returns, they would then be asked to insure their stock by the agents of the society, and would obtain policies of insurance upon payment of the first premium. An account would be opened with each owner in a ledger. 7. The common premium to be at the rate of 1s. a month, which may be commuted into a single annual payment of 11s. down on £10 beasts, and so on in proportion to insurable value. No calf and no beast worth less than £5 to be insured. The insurance policy might be transferred by endorsement, on the sale of cattle being registered in the insurant's account. Horses and sheep may also be insured on terms agreed upon. 8. The premiums, after providing a reserve fund for times of plague, to be adjusted on the experience of the the society, and to be calculated from that experience by an actuary, so as to meet equitably the various risks on different animals at different ages. 9. The payments of premiums and the payments on policies may be made through the Post-office, allowing a percentage for expense; and where it was necessary, special collectors might be employed. 10. All payments on policies to be made on the authority of a specially-appointed officer in every county, acting under the inspection of a committee. 11. The accounts would be duly audited and published annually, with a digest of the returns, and a report by the actuary. The authentic facts thus elicited would throw light on the causes of cattle diseases—would show us why, for instance, the mortality from cattle-plague was 34 per cent. in Cheshire, 18 in Cambridgeshire, 14 in Flintshire, 6 in Yorkshire, .09 in Devonshire. The causes, being known, might often be removed. 12. All cattle imported should pay adequate premiums, and, if healthy, receive policies covering a term of one month or more: the premium to be collected by the officers of her Majesty's customs, and paid into the account of the Society at the Bank of England. The losses on such policies to be recoverable on proof of death by disease supervening in England, precisely as in the case of beasts of home origin. 13. No person losing cattle uninsured to receive compensation under any circumstances from any public rate. 14. Landlords, for their own protection, as they do now in the case of houses, might insist on the insertion of stock insurance clauses in leases and covenants. 15. Under these encouragements, it is probable that half the live stock of the United Kingdom would be ultimately insured, and then the sum insured would be nearly equal to the £77,000,000 of insured agricultural stock, which, I am told, is not half the whole value of such stock in the country. If a large portion of live stock is insured, the annual premium will amount to two or three millions, which will sufficiently pay all losses and expenses.

As in the case of dead stock, live stock insurance would work its way gradually; and recurring plagues, from which we can never hope to be entirely exempt, will convince the most sceptical of its utility. Fires, it is well known, are the advertisements of the fire insurance offices. Whatever profits accrue should be divided annually among the insurants, on the mutual principle. Unless the owners of a million head of cattle gave in their adhesion, it would not be prudent to commence operations. The alternative would then be to leave things as they are, or to ask for the insurance of all the country, on a plan which I lay upon the table, and will probably appear in the *Journal* of the Royal Agricultural Society.

Dr. Crisp inquired what diseases Dr. Farr proposed to include in his system of insurance?

Dr. Farr: All diseases. It would be perfectly absurd to insure against any one particular disease. It would be as absurd, and would as completely break down, as if it were attempted to insure with regard to any special disease in the human subject. Diseases could not be distinguished with sufficient accuracy to carry on business on that principle. It was difficult enough now to secure a sum payable on a man's death; and if the payment at death were regulated by pneumonia, consumption, or other affections, much more easily distinguishable in men than in cows, it would be found to be utterly impracticable. That was one reason why all the local offices had broken down during the height of the cattle plague.

Dr. Crisp: If Dr. Farr had submitted to the meeting statistics connected with human mortality, he should not presume to differ from him; but, unfortunately, his data were necessarily so imperfect that it was impossible to draw anything like positive, or even proximate, conclusions from them. With regard to the loss of cattle in this country, Dr. Farr assumed the number to be 210,000; but if he were to say that that was half the number that had been lost, he would be nearer the mark, for this reason: In his neighbourhood (Chelsea) a cowkeeper had twenty cows. One was seized with the rinderpest; and, the others exhibiting symptoms, the man had them all killed whilst they were in tolerably good condition, and sent them to market. These cows, therefore, were not included in the returns. Another man, in the country—and he could mention numerous instances of the sort—had a number of young beasts, lean and not fit for the knife, but, because a neighbour had the rinderpest on his farm, he at once sent them to market, and sold them at an immense sacrifice. In this way thousands and tens of thousands of animals had been killed throughout the country. True, it might be answered that they were used for food; but it should be borne in mind that they had not one-quarter of the amount of flesh upon them that they would have had in case they had been kept. As to Dr. Farr's scheme of insurance, he believed it to be utterly impracticable, and that it would only be adding one more to the vast number of clubs which already existed in this country, where, indeed, there was nothing but clubism. In his opinion, the only good and useful plan would be for the Government to take the matter in hand, and, if deemed practicable, establish a national insurance, without entrusting the duty to companies or voluntary associations. That, at all events, was his impression; for he did not think that Dr. Farr was quite correct in his estimate that one-half the owners of cattle would join an insurance company. If they looked at Norfolk, Cheshire, and other counties, where insurance societies had been established, they would find that not a fourth of the owners of cattle had joined those institutions; and he judged from experience, therefore, that the scheme proposed was really impracticable. There was yet another difficulty. Dr. Farr said he would include all diseases. But to whom were they to look in this country for a definition of disease? What occurred a night or two ago in the House of Commons with special reference to this subject? Sir Jervoise Jervoise asked Mr. Bruce, the Minister of Education, if any means could be taken to arrest that direful disease which had decimated so many of the London dairies—pleuro-pneumonia; and the answer this elicited from the Minister was, that pleuro-pneumonia was not like the cattle-plague, but was a chronic disease that had no relation to the cattle-plague: therefore, we could take no steps, as we did with regard to the cattle-plague! He (Dr. Crisp) had had a great deal to do with cases of pleuro-pneumonia. He had examined many animals in all stages of the disease, and after they had died of it; and he had no hesitation in saying that pleuro-pneumonia was as acute a disease as the cattle-plague itself; and that might be a chronic disease, for he had seen a vast number of animals linger on for eight or nine weeks and then die; and although the average duration of the attack in rinderpest might be seven days, in very numerous cases of pleuro-pneumonia the disease was so acute that death took place in a shorter time than that. This he had repeatedly witnessed; and yet in the House of Commons they had the Minister of Education saying that pleuro-pneumonia was a chronic disease—than which a more monstrous display of ignorance was never seen in the House of Commons. How great, then, would be the difficulty if they had to shape their course according to the diction of such a leader as this! In short, he saw nothing but difficulty in the plan proposed by Dr. Farr. He repeated that it was utterly impracticable, and that the Government ought to take the matter entirely into its own hands. The first step was, in his judgment, to establish a good veterinary college in England, Scotland, and Ireland. This was a most important item, and Dr. Farr must know that nine-tenths of the men who acted as cattle doctors—he did not blame them, however: it was the fault of the Government—had no proper education, and were incompetent persons to give certificates. That state of things must be remedied. There must first be a good college of veterinary surgeons established, and then some plan might be hit upon that would be carried out efficiently and properly. In the county of Chester altogether 814,000 head of cattle had died. The last week, as Dr. Farr had stated, that number was reduced to 230,000; but the week before, in Cheshire alone, 575,000 were reported as having died. But now came the most important thing in connection with the matter. According to the returns, in the course of the seven weeks ending the 6th of June, about 18,000 cattle died, whilst about 2,000 recovered. The "stamping out" system was avowedly in operation, yet nearly 2,000 head of cattle had recovered. How did they recover? Most of them were probably treated medicinally, and during five or six weeks everything around them was subject to infection. Yet this was called the "stamping-out" system, and the cattle plague was to be got rid of in this way! Although Dr. Farr had prognosticated that the rinderpest would subside this month, there was no evidence, if one looked at its history and progress, to show that the disease had the slightest resemblance to any epidemic with which we were acquainted, or that it would die out. The fact was that the most stringent measures must be adopted; and, looking at the plan suggested by Dr. Farr, he came to the conclusion that it could never be adopted, and that they must look to the Government alone. Dr. Farr had mentioned the case of a man who had 20 cows killed, and received the value of only 2. Now, in his opinion, it was a most monstrous thing that an inspector should be permitted to enter a man's premises, order 20 cows to be killed, and that the owner should receive the value of 2 only.

Dr. **Farr** said he had stated that there were four killed, not 20.

Dr. **Crisp** nevertheless looked upon such a system as a most dishonest one.

Mr. **Torr** said the inspector had nothing to do with the matter, because remuneration for the loss of the animals was a question that was decided by the magistrates and local committees in the various counties, who had full power to assess at any sum, within the limit of the Act of Parliament, that they might think proper. That Act had, however, come into operation at a late period, so that many persons could not be compensated for their losses; and, generally speaking, the compensation granted under the Act had throughout the country been rather niggardly, and ought to have been larger. The value of the "stamping-out" system had no doubt lost much of its effect, owing to its not having been rigidly carried out. Cases of cure ought never to have been heard of after the passing of the Act which the farmers themselves had requested the Government to introduce. For it was not the absolute cure that constituted the saving, but it was the keeping of diseased cattle in the neighbourhood that caused the loss. Hence the "stamping out" system having only been carried out partially had not produced its just and proper effect. Moreover, it was to be lamented that that system had not been adopted and put in force sooner; and further, that in many counties the Act of Parliament, which was based upon sound principles, had been evaded more or less by the very persons who had been most noisy in demanding legislation upon the subject. With reference to the question of insurance, without saying anything for or against the plan of Dr. Farr or any other, as far as his experience went, it led him to conclusions entirely adverse to the voluntary principle. What happened last year might occur again; and the results proved that nothing founded upon the voluntary principle had the slightest chance of success. If it had not hitherto, there was no reason why it should hereafter. He had received letters on this subject from farmers in Silesia, where the cattle plague made its appearance periodically every few years, and it was really astonishing how small a sum, in the shape of a head tax, paid into a Government bond, was sufficient to meet the losses. He took the loss to be not the loss of the whole of the cattle in the country, and requiring an insurance of ten shillings a piece. They might as well insure the moon as to ask the farmers to do that. What ought to be done was to have a head tax on every animal in the first instance so small in amount, that no man could object to it, and then let the remuneration come from the public. All counties where there was much cattle would pay the head tax. Counties where there was not much cattle would have no tax to pay; but the community at large would be called upon to pay the compensation, and that was not now done. The head tax to begin with, then, should in his opinion be a small one. All systems of insurance that only included a portion of the stock of a county must be wrong in principle; and if the system were voluntary, one man would insure and another would not. Previous to the breaking out of the rinderpest there were three or four large companies for mutual insurance of diseased cattle in operation, and every one of them had broken down; and for this reason. One man said, "I take good care of my stock, and my neighbour does not. Do you think I am such a fool as to go to an insurance company when he will get all the premiums? For if you go to the National Insurance Company, you will see the same men receiving claims as insurers every year." In the first instance, then, he thought that the head tax to be placed upon all cattle should be as low as a shilling, or sixpence twice a year, an amount at which no one could reasonably grumble ["On the birth?"] No; on possession at the time, say at Lady-day and Michaelmas. On many grazing farms, cattle were put on in the spring and taken off in the autumn. It would be well, therefore, to take it for two years. And he had mentioned this to Lord Spencer, who expressed himself favourably to it. Supposing he had 300 head of cattle at Michaelmas, what was a shilling a head to pay upon them? Just £15, a mere bagatelle. As to the premiums to be paid on foreign cattle, that he might be permitted to say was quite foreign to the subject. The only way to act was this: He would insure them by insuring their lives, and taking care that they did not come out of the slaughter-house until they were perfectly healthy. It was a difficult question to decide upon; but he was entirely opposed to voluntary insurance, which would be partial in its operation. The system would leave the farmer entirely to the tender mercy of his neighbours, who would not insure, and thus there would be no real insurance at all. Once more he must express his regret that the "stamping out" system had not had a fair trial, though he admitted that many districts were much indebted to it.

Mr. **Albert Pell** wished to say a few words with regard to Dr. Farr's proposal, for establishing a system of voluntary assurance.

Dr. **Farr**: The plan which he had submitted to the Government was for the establishment of a compulsory or universal system of insurance. That which he had laid before the meeting was founded on the voluntary principle.

Mr. **Pell** might be allowed to remind them, on this point, of the old proverb, which really had much weight in it, that "it is well to be off with the old love before we are on with the new;" and at this moment they are enjoying the benefits of a very wide and valuable system of compulsory insurance. The scheme, according to which the rinderpest had been dealt with by Parliament and the Government, was simply that of a compulsory insurance; the valuation premium not being ascertained until the animal was at the point of death or dead, which was the best time for valuing it. That, in his mind, was a valuable plan to adhere to in such an emergency, and he should be very sorry indeed to relinquish in any way the existing method by which compensation was recovered in cases of loss, for another system based upon the principle of voluntary insurance. Whether in the course of time, when they had got rid of the plague, and things had returned to their normal condition, it would be advisable to form a general or larger insurance company, was a matter that required a great deal of consideration before deciding upon. Taking Dr. Farr's own figures, he should not himself, speaking from his own experience, be inclined to take shares in any insurance company that offered him, at a cost of 11s. a year, compensation for any cattle that he might lose under ordinary circumstances; and for this reason—that his own returns of per-centage loss of cattle showed that out of 160 head of beasts the average amount of his loss never exceeded £60 a year. A great many of his beasts were young animals; yet, by the exercise of care and attention, he had been enabled still further and materially to reduce that per-centage. He found that there were certain disorders to which animals were subjected, and by dealing with these early and promptly his average loss was now diminished from ten beasts a year to five only. He did not know how the existence of a system of general assurance would act on his own mind; but he feared that in such case it was human nature to be exceedingly careless, and that men would be deterred from applying their minds to the prevention and cure of disease. So far as the rinderpest insurance was concerned, they had it now distinctly under the Act of Parliament. It was a safe insurance. It had operated well; and he should be very sorry indeed to see any scheme of voluntary insurance, which should set aside the vantage ground on which they now stood, substituted for it. Perhaps he might be allowed to make a remark upon one point to which Dr. Farr had referred, and that was the distressing subject of a guarantee fund. To him that would be most objectionable. Dr. Farr suggested that the noblemen and gentlemen of the county should furnish a guarantee fund. But this he (Mr. Pell) thought would put them in an invidious position. Conjecture must not be mixed up with positive facts deduced from mathematical reasoning. It was not fair to mix up the two. Many gentlemen would resent it with spirit. They would say they did not wish to be branded as curmudgeons because they did not assist in the guarantee fund. On the other hand, some again, from a fear of public opinion, might come forward, and give beyond what there was any just claim upon them for. In December last a very large meeting was held at Northampton, and the idea of the guarantee fund was eagerly seized upon by the great body of persons in the room, and in the end they came to this: Let those who don't choose to give go home and keep their money in their pockets. The result was that a nobleman who was present said that if that was to be the shape the thing was to assume he would have nothing more to do with it. He thought therefore that the mixture of a guarantee fund, and the money to be raised in that way, with mathematical considerations, was a very bad one. On the whole, he was inclined to the opinion that he should be sorry to see the plan of Dr. Farr adopted to the loss of the vantage ground they now occupied under the action of the Government measures.

Mr. **Finlay Dun** was surprised to hear Dr. Farr speak of rinderpest as if it were an epidemic disease; for it was not at all epidemic, except in the sense of being widely extended. Those who were conversant with it, must be well aware that it depended solely on contagion; and he should be sorry if the remarks of Dr. Farr on that point led any one to suppose that it might from time to time spring up spontaneously.

Dr. **Farr** said he had not intended to convey that idea.

Mr. **F. Dun** did not mean to say that that was stated in terms; but it might be inferred from the observations which were made. That the disease depended on contagion was the fundamental fact upon which were based the arrangements which were made by the legislature for slaughtering, and which had been carried out with tolerable efficiency throughout the country, for the purpose of stamping out the disease and entirely getting rid of it. While the number of cases that occurred weekly was now reduced below a thousand, it was important to bear in mind that only fifty-one weeks ago there were hardly any cases at all in this country, and that there should therefore be no relaxation whatever in the pains and care bestowed in endeavouring to thrust out the disease. He was sorry to hear the observations of the gentleman who spoke first, charging with inefficiency the class of gentlemen who had in so many instances been called upon to cope with the cattle disease—he meant of course the veterinary surgeons.

Dr. **Crisp**: Pardon me; it was of the non-veterinary surgeons that I spoke, not the veterinary surgeons, who, I believe, deserve the utmost praise (Hear, hear).

Mr. **Frere** said there was one point connected with the discussions on cattle plague on which he wished to say a word by way of explanation. At the earliest meeting of the Society at which the subject was considered, Mr. Spooner called attention to a plan for giving compensation for animals slaughtered. He (Mr. Frere) had reason to believe that that gentleman desired that his scheme should only apply to the case of animals which were lost before an Act of Parliament was passed authorising compensation, but he was not so reported; and he must say that he did not so understand him at the time, or he would have taken care that in the *Journal* of the Society it should be seen that he referred only to losses anterior to the operation of the Act. Such losses would, he trusted, still be kept in view, and a desire manifested to give largely and liberally from private sources what might be necessary to supplement the national grants in the case of those who had not the benefit of the law of the land.

Major **Thompson** thought it was only during this summer that the subject under consideration could be handled with any chance of success. The plague might possibly soon leave this country; and then their chances of forming a national insurance company would fall to the ground. There would perhaps never again be so good an opportunity of carrying out such a project. On the importance of forming a society of that kind he need not dilate. He should like to know how a man who had lost a large portion of his stock by the cattle plague could be expected to invest the last remnants of his money, if he had any left, in the repurchase of fresh animals, unless he could insure his new stock, so as to be secure against fresh losses of the same kind. They all knew that farmers could not cultivate the land without stock. They must have stock to convert their straw und green crops into manure, for they could not grow corn without manure; and therefore he thought it was abundantly evident that an insurance office was much needed. There were some 26,000 farmers who had lost stock. Generally speaking, farmers invested a large portion of their capital in their occupations. There was no such seductive speculation as farming: there was always something to be done on the farm, and the tenant was always laying out money. But if a farmer who had lost his animals could not purchase fresh stock, he must leave the farm, and leave in it a great deal of his capital; and, considering that no less than 26,000 farmers were affected by the cattle plague, it was surely desirable to endeavour to avert that evil. There were, he admitted, a great many difficulties connected with insurance; but he believed that, if the grand object were kept steadily in view, they would vanish. Dr. Farr would help them over the difficulties with regard to rates. He (Major Thompson) did not think the rates need be as high as some had supposed. As to fraud, he had great faith in the British farmer. He had seen a great deal of the farmers of this country; and he did not believe there was much cause for apprehension on that point. Moreover, generally speaking, if an animal were worth £20, the amount for which it was insured would be only £15; and what temptation, then, was there to fraud? The office only allowed three-fourths of the value, or £11 5s.; and if to this there was added one-fourth of the salvage, the amount received would still be only a little over £12. Let him instance his own case. He happened to be an owner of dairy stock—the most risky stock of all. He had to claim for 44 cows; and the amount which he claimed per head was £8 15s., the cows having originally cost him, on the average, £22 10s. He felt perfectly certain that, if the office had allowed him to kill his animals before they were attacked, which they would not do, his claim would have been considerably less. When a disease like the rinderpest occurred, you could not expect to get more than £8 per head from an insurance office; and the animals might be sold at a higher price than that. If they were sold for £8 a head, and you only claimed at the insurance office for half the number, the claim would be under £4: it would be £3 15s., or one-fourth of the £15 office value. In short, the claim would bear only a very small proportion to the value of the animal. It was impossible to enter fully into the question of insurance at a meeting like that; but he felt sure that it would pay if the thing were done on a sufficiently large scale. He had always been opposed to small offices, on the ground that the expenses were too large in proportion to the amount of business done. When there was only a small breadth of country covered, there was great danger of the liabilities being too heavy to be borne; whereas, by taking in the whole country, the healthy parts as well as those affected contributed, and the premiums in one district made up for the casualties in another. Like Mr. Pell, he should be very sorry to see the Government arrangements done away with for the present, for the result would then be that if he were to buy a number of animals, and they were ordered to be slaughtered, he could look neither to the Government nor to an insurance office for compensation. No man would be willing to place himself in such a position. There were in the United Kingdom 3,286,000 cows, the value of which, at £15 per head, was £50,000,000, and, notwithstanding what had been said about the reluctance of farmers generally to insure, he felt quite sure that the owners of cows would almost all insure. His stock consisted of cows, the most risky stock one could have, and yet all he claimed was £8 per head. If insurance answered in the case of cows, he was quite sure it would answer in the case of every other kind of live stock in the healthy grazing districts and on farms generally, and it would also answer with horses and sheep. As to Dr. Crisp's proposal that a veterinary college should be formed, where students might be educated in the art of curing diseases, he was afraid that before that object could be carried out, the farmers might lose all their stock. He would not detain the meeting any longer, but the subject was one of such vast importance, that he hoped there would before long be another discussion upon it. No opportunity should be lost of forming a great national insurance office, which was required not merely for cattle disease, but for lung complaints and many other epidemics from which farmers were constantly suffering.

Mr. W. **Clode** said the question whether insurance should be voluntary or compulsory did not affect the principle advocated by Dr. Farr, namely, the importance of a system of insurance. There were matters of detail which would, of course, have to be considered; but these did not affect the principle involved in the discussion. Before, however, any general system was established, they must have some groundwork on which a good scheme of insurance might be based. They were lamentably ignorant of the diseases to which cattle were ordinarily subject. They knew that pleuro-pneumonia constantly existed to a very large extent, but they did not know to what extent; and if a proper system of recording the diseases of animals prevailed, it would bring to light some startling facts, and, at the same time, establish a sure groundwork for a good system of insurance. The science of vital statistics, as applied even to human life, was of comparatively modern origin; but, thanks to Dr. Farr, it was now placed on a solid foundation. There was nothing of that kind with respect to the deaths of stock; and it was not creditable to this country that it should be in such a state of ignorance on that subject. If that Society would, as a matter of public policy, advocate a system of cattle statistics, it might thereby lay the groundwork for a satisfactory system of insurance; and he believed that all the most celebrated veterinary surgeons were in favour of that.

Professor **Simonds** could tell them most lamentable facts connected with the prevalence of ordinary diseases. While the records of these cases were scattered all over the country, they made no impression on the public mind; but if they were collected together and published periodically in a well-digested form, they would become a most valuable addition to the stock of information possessed by agriculturists.

Sir **George Jenkinson**, M.P., said this was a subject on which he had bestowed considerable attention, in consequence of an insurance society having been established in the county to which he belonged namely, Gloucestershire. A gentleman with whom he had acted, and who was well-known in that room, Mr. E. Holland, had collected a number of statistics which tended to show that no insurance company could ever stand against a panic or an epidemic. Although the principle which Dr. Farr had advocated was a very sound one, especially as regarded human life, it was very difficult of application to the case of cattle. They all knew that farmers were, as a body, very lethargic. When a panic arose they might be very willing, and even anxious, to insure immediately; but he believed that after the cattle disease had died away the proportion of tenant-farmers who would insure their stock would be scarcely one in a hundred, and therefore the great pressure which would come upon any insurance society in case of rinderpest would probably overwhelm it. The strength of insurance societies lay in the constant support which they received, and in the fact that the healthy made up for the unhealthy; and if farmers insured under a panic, and ceased to insure after it, a society for the insurance of live stock could not prosper. One great obstacle he considered was connected with the changes of stock, the animals being changed to such an extent by sales that identification would be a matter of extreme difficulty. It was, however, very important that this subject should be well ventilated, and that the opinions both for and against insurance should be fully stated; for it was only in that way that a good system could be formed from the different theories that were propounded.

Major **Thompson** observed that identification might be secured by branding the horns.

The **Chairman** said there was no proposition before the meeting with respect to the question introduced by Dr. Farr, but he must say that the manner in which that gentleman had treated it showed how deeply and carefully he had studied it. The subject was most difficult, and he for one would not venture to urge the Council of the Royal Agricultural Society to adopt Dr. Farr's plan. It was far from being perfect at present, as regarded the paying success of an insurance office and the protection of the farmer, and a great deal more consideration would be required before it would be in a fit state for adoption by the Council. He had, however, great pleasure in proposing a vote of thanks to Dr. Farr for his paper.

Mr. **Torr**, in seconding the resolution, deprecated the notion that the Council in fixing the subject for discussion contemplated any immediate steps with a view to the establishment of a general insurance system, adding that something might possibly be done when the rinderpest was gone.

The motion having been put and carried,

Dr. **Farr**, after returning thanks, reminded the meeting that he had submitted two plans, one of which if adopted would have to be carried out by the Government. He concurred in a great deal of what had been said about the difficulty of carrying out the voluntary principle in relation to insurance. As regarded a compulsory system, whereas Mr. Torr said he would take 1s. at first, he (Dr. Farr) would take 2s., and power to come again should more be required. As under the present system the Government only had the right to order the slaughter of animals, farmers could only look to the Government for compensation. He believed that the power extended only to October next.

Professor SIMONDS: Only to August.

Dr. FARR continued: Of course there would be application for its further extension. If the Government ordered animals affected with rinderpest to be killed, the Government must pay for them; but if animals died naturally from pleuro-pneumonia or other diseases of similar character, the owners could not expect the rest of the community to bear the loss any more than they could expect them to pay their premiums for insurance against fire. Not long ago, farmers instead of insuring against fire had begging collections to save them from losses arising from that cause; but now they were insured to the extent of £70,000,000, and he felt sure that if they found that it was their interest to insure their live stock they would do it in time. But they must be educated on the subject of insurance by means of discussions of that kind. Everybody knew that farmers were, as a body, as acute as any men in the world, and they must in time see what was their own interest in this matter. He put his paper before them for consideration, and he asked them to take into account the facts there presented. He fully concurred with Mr. Clode that the Royal Agricultural Society might, without committing itself to any scheme, ask the Government to obtain a complete return of all the diseases of cattle in different parts of the country.

The meeting then separated.

THE BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

The following is the report in full of the Council to the General Meeting at Salisbury.

"The Council have the gratification to report a considerable accession of new members since the last annual meeting. There are now upon the list 99 governors, 58 life members, and 984 members—total, 1,141; being an increase of 38 new members, allowance being made for deaths and resignations. The financial statement, made up to 31st December last, has been printed and circulated among the members. The Society's funded property remains the same as last year, namely £923 12s. Consols. The value of the plant, after making allowance for depreciation, is £2,891 3s. 11d., and there is an increase in the balance of £514 2s. 4d. As emergencies seriously affecting the Society's funds may occasionally arise, it is obviously important to maintain an ample reserve fund, and this object can be most effectually attained by a systematic endeavour to increase the number of life and annual members. The district comprised within the sphere of the Society's operations has not been altogether free from that terrible scourge the cattle plague, but as compared with other parts of England there has not been many cases. As early as August last the Council appointed a committee to collect and disseminate information on the subject. A circular inviting attention to the importance of establishing Mutual Cattle Protection Associations within a prescribed area was sent to all the chairmen and clerks of Boards of Guardians in the counties of Devon, Somerset, Cornwall, Dorset, Wilts, and Gloucester. Handbills containing suggestions to stock-owners were at the same time distributed, and every effort was made to rouse the attention of the public to a question of so vital importance to producers and consumers. The Council have the satisfaction to know that the steps thus taken by the Society were approved by the Government. The Council, prior to the meeting of Parliament, addressed a memorial to the Lords of the Privy Council on the desirability of regulating the traffic of cattle and the temporary suspension of fairs and markets. Similar representations were addressed to the Lord-Lieutenant of each of the western counties, and it is believed that much good was thereby effected. As a practical corollary to this recommendation, the Council had to determine whether the meeting announced to be held at Salisbury in 1866 should be altogether abandoned, or limited to an exhibition of horses, poultry, agricultural implements, works of art, and horticultural specimens. After an interchange of communication between the Council and the Salisbury Local Committee, the latter alternative was adopted, and the Council refer with pride and satisfaction to the remarkable display of agricultural implements, quite unparalleled at any former meeting of this Society. The show of horses, though not so large as anticipated, considering the amount of the prize money offered in regard to the classes for agricultural purposes, is superior to that of any former exhibition, and but for a misunderstanding as to the time for closing the entries, the class of thorough-bred stallions would have been larger and more complete. The Poultry Show is one of great excellence, an interesting feature being the exhibition of a number of birds of a peculiar French breed, suitable for farm purposes. In the arts exhibition a decided improvement is perceptible. The horticultural tent is well filled with plants and flowers. Among the examples of Honiton lace, there are several of great excellence. It will be for the annual meeting to determine where the meeting for 1867 shall be held. During the year the office of secretary, so long and ably filled by Mr. Henry St. John Maule, has been resigned by him in consequence of the increasing magnitude of the Society's operations. In recognition of his services the Council have conferred upon him the distinction of honorary secretary, and recommend that he be elected an honorary life member of the Society. The combined duties of secretary and editor are now discharged by Mr. Josiah Goodwin. Mr. Sydney Hodges having resigned his appointment as curator of the arts' department, a redistribution of the duties performed by the steward has taken place. Mr. R. R. M. Daw, as hon. secretary, will continue to give his valuable aid to the department, but the office of curator has been abolished. To the Right Rev. the Lord Bishop of Salisbury, the Worshipful the Mayor, the members of the local committee, and the hon. local secretary (Mr. C. M. Lee), the Council desire to return their best thanks for the cordiality with which they have received the Society. The Council further desire to express their best thanks to the directors and principal officers of railway companies that have afforded facilities for transit in connexion with the Salisbury meeting. The Council recommend that the Right Hon. Viscount Falmouth be requested to accept the office of president for the ensuing year. The Council recommend that the Right Hon. Lord Poltimore and Capt. Paget, M.P., of Cranmore Hall, in the connty of Somerset, be elected vice-presidents; and that to supply the vacancies occurring in the Council through the retirement of the members by rotation, the following members of the Society be elected members of the Council, viz.: For the Eastern Division—Clement Bush, Weston, Bath; J. H. Cotterell, Bath; T. Danger, Huntshill, Bridgwater; T. Duckham, Baysham Court, Ross; John Gray, Kingweston, Somerset; Jonathan Gray, Summerhill, Bath; James Hole, Knowle, Dunstan; J. E. Knollys, Fitshead Court, Taunton; Gabriel Stone, Poole, Brent Knowle, Weston-super-Mare; H. Robertson, Over-Stowey, Bridgwater; Herbert William, Stinsford, Dorchester; and J. Webb King, West Everley, Marlborough. For the Western Division—Robert Brent, M.D., Woodbury, Exeter; John Tanner Davey, Rose Ash, Southmolton; John Daw, Exeter; R. R. M. Daw, Exeter; John Fry, Woodgate, Wellington, Somerset; Charles Gordon, Wiscombe Park, Honiton; W. R. Hicks, Westheath, Codmin; George Langdon, Ashford, Barnstaple; Robert May, Rewe, Exeter; John W. Sillivant, The Cottage, Ottery St. Mary. Without reference to districts—James Hole, Knowle, Dunstan; J. E. Knollys, Fitzhead Court, Taunton; E. U. Vidal, Cornborough, Bideford; Edward Bridges, Willyams, Nanskivel, St. Columb.

HIGHLAND AGRICULTURAL SOCIETY.

The half-yearly general meeting of this Society was held in Edinburgh on Wednesday, June 6, Lord Belhaven and Stenton, K.T., presiding.

THE SECRETARYSHIP.

Mr. Campbell Swinton said he had been requested by the directors to state the steps they had found it necessary to take in consequence of the fatal event by which, as they were aware, they had been deprived of the services of the gentleman whom they had hoped to see occupying the position of secretary of the society. They all knew how gratifying it was to Mr. Macduff to have the honour conferred upon him, and the directors of the society had been looking confidently forward to their having the benefit of his services. They were all aware that, shortly after his appointment, he had been seized with severe illness, which finally terminated fatally. It was for him now to report simply for the information of the meeting, that the directors had unanimously appointed as secretary Mr. Fletcher Norton Menzies, a gentleman who, besides the knowledge the directors had of his qualification for the office, had this recommendation—that on the occasion of Mr. Macduff's election, Mr. Menzies stood second on the list of candidates, and received very influential and important support. The directors confidently recommended him to the society as one who could most efficiently and ably discharge the duties of the office.

The following gentlemen were balloted for and admitted: Mr. Robert George Bolam, Weetwood Hall, Wooler; Mr. James Elder, East Bearford, Haddington; Mr. Charles Gunn, 2, Park Circus, Glasgow; Mr. George Hunter Marshall, of Gartchouzie, Callander; Mr. Duncan Monteith, Belville Lodge, Edinburgh; Mr. Thomas B. Black, Haddington; Mr. George Rankin, Union Bank, Aberfeldy.

The Secretary laid on the table the premium book of the society for 1867, which was approved.

Mr. Forbes Irvine, of Drum, said that, in accordance with the intimation made at the general meeting of the society, the "Transactions" were now to be published separately from the "Journal of Agriculture," and were distributed to members free of charge. In the preface to the first number, the directors had referred briefly to the origin of the "Transactions." The first series commenced in 1799, and were published at intervals. Six volumes were completed from that date up to 1824. The second series appeared in 1828, was a quarterly publication, and was completed in eight volumes. The third began in 1843, was published quarterly, and was continued till 1865 at the close of the eleventh volume, when the present series was commenced. He might also mention, with the view of promoting the usefulness of the publication, and in consequence of suggestions from various quarters, the directors had resolved that an index for the last series of the "Transactions," with the view of ultimately embracing the earlier series, would be preferred. This would add to the usefuiness of the "Transactions" as a book of reference. Papers for the next number were now under consideration, and the number would appear at the usual time in February. Two numbers made a volume. In connection with this subject, he might just report that the gold medal for a report of experiments on rye grass and clover with different top-dressings, and the silver medal for a report of experiments on turnips, had been awarded. On opening the sealed note which accompanied these papers, they found that both the prizes had been gained by the same gentleman, Mr. Robert Swanwick, Whittington, Chesterfield, who, though a member of the Royal College, Gloucestershire, was also a member of the Highland Society.

Mr. Harvey (Whittinghame Mains) said, in 1864-5 experiments from different kinds of wheat were announced, and he was appointed one of the judges. Two gentlemen, one in East Lothian, and another near Kilmarnock, competed; and he found that no notice had yet been taken of these experiments. He thought it was not right that they should have to wait from Martinmas, 1865, till the spring of 1867 for these reports; and if the forms of the society would not allow of their being published sooner, he suggested that an abstract should be sent to the agricultural papers, and the report published in full in the "Transactions."

Mr. Irvine said one reason why these reports had not appeared so soon as might be desirable was the limited space at their disposal in the "Transactions;" but he had obtained the sanction of the directors when it was necessary to make certain enlargements to a limited extent, so that he would be enabled to publish papers more rapidly than had hitherto been done. The papers referred to would form part of the forthcoming number; and he had been authorised to communicate to the agricultural papers such as might be of importance and interest, but which could not appear in the "Transactions"—either the papers themselves, or such an abstract as might seem necessary.

Mr. Kinloch moved that the show which was arranged to be held at Glasgow in the summer of 1866, and at Dundee in the summer of 1867, stand respectively postponed for one year. It would, however, be for next general meeting in January to determine whether the state of the country, or rather the state of the cattle-plague, would permit of arrangements being prosecuted for holding the show in Glasgow in the summer of 1867.

The motion was unanimously agreed to.

Mr. Campbell Swinton made a similar announcement with regard to the district shows. All the premiums and medals offered by the society in connection with local competitions had been withdrawn. Various districts would be entitled to the renewal of their respective grants in 1867.

Mr. Walker, of Bowland, reported that the examinations took place on the 7th of March last, when two students were found entitled to the society's agricultural certificate and diploma, viz., R. H. Goddard, Newcastle-on-Tyne, and G. Y. Wall, jun., Durham—both educated at the Royal Agricultural College, Cirencester. The two prizes annually allowed to the student who pass the best and second-best examinations in the agricultural class in the University of Edinburgh were this year awarded by Professor Wilson to—1st, Francis Moffat Haldane, Edinburgh; 2, David Carswell, Rathillet, Fifeshire.

Professor Anderson gave in the report on the Chemical Department. During the past six months the amount of work gone through in the laboratory was very large. The number of analyses made for the members of the Society exceeded the number in preceding years, and had involved many matters not only of individual interest, but of importance to the community at large. He had particularly directed his attention, at this time, to the adulteration of oilcake—a subject of such importance that he thought it necessary to publish a short paper in the last issue of the "Transactions." Since that time he had prosecuted inquiries as far as possible, and had arrived at some cases of adulteration. He had seen several samples of linseed sold to manufacturers which really contained only a few per cent. of that substance, the remainder being seeds of grasses and other weeds. He had no doubt that was carried on to a considerable extent. He had observed some curious points connected with the supply of Peruvian guano this year. It was generally under the average. Several cargoes contained masses of saline matter, and small stones and sand to the extent of five, ten, and even more per cent.—a very unusual occurrence. Several cases of very flagrant adulteration had also occurred. During the past few months he had also been occupied in arranging the details of the system of field experiments now determined on by the Society. He had had to organise the whole system on which these experiments were to proceed, which involved a large amount of correspondence and a great deal of miscellaneous work. The whole manures were weighed by himself and his coadjutors; and it would give an idea of the amount of work when he stated that upwards of one thousand parcels of manure of different kinds had been thus weighed out. All this had been done with great care, so as to secure the most perfect uniformity in the experimeets. The experimenters had had special instructions given them, so that the thing might be done in a satisfactory manner. Through the instrumentality of the local committees, a body of experimenters had been selected, men of the very highest standing. He had no doubt the results would form a most important contribution to the exact knowledge of the science of agricultural facts.

Sir A. G. MAITLAND said: The usual examination of students took place in the middle of the month of April. It was carried on and completed with the usual success which has attended all these examinations. I would express the regret of those directors present that the attendance of visitors at these interesting examinations was so very small. I must also regret that there were so few of my brother-"lairds" who ever put in an appearance on such occasions: they are attended and supported principally by the more influential tenant-farmers of this neighbourhood. The landlords seem to turn their backs on these examinations. This I regret; for many of them have a deep interest in our domestic animals; and if they knew the encouragement it gave the students, they would, no doubt, put themselves to some trouble to be there on the day of examination. When they knew also that they were presided over by the very ablest men of the profession in Edinburgh, they would believe they could scarcely go there without deriving some useful information. The examinatious this year had a melancholy interest attached to them. The moving spirit of that class-room had passed away from amongst his pupils and friends. Professor Dick was not there. I am certain I express the feelings of every member of this great Society when I say that every oue regrets the loss that the Highland Society has sustained by the death of Professor Dick. I would say further that he was the first educated person in Scotland who made the attempt to rescue from darkness and obscurity veterinary science; and I am sure we will take the entire public with us in our expression of regret. The next subject I would lay before you is the bill which has been brought into Parliament by Mr. Holland. The directors wish this meeting to petition against the bill, and appoint a small committee to be named to watch over its progress in Parliament. It was also suggested that they should remit to the directors to consider the subject generally, and to report.

Mr. HOPE, Fentonbarns, explained that they had been backward in doing anything in regard to the bill, because they thought it had been withdrawn, but it had since appeared that it was to come up that day. It appeared to him, from reading the bill, that no one holding a veterinarian's certificate of the Highland Society could call himself a veterinary surgeon, that being a distinction which was reserved for the Veterinary College in England. He did not think it would be doing justice to those who held certificates of the Highland Society if they allowed the bill to pass unopposed. He thought they should petition against it. A committee had been appointed to inquire into the propriety of obtaining a charter for a college in Scotland, and a number of individuals were in London at present endeavouring to secure that object. They would no doubt be opposed by the members of the College of Veterinary Science in London. They in London wished to have the right of granting certificates for Scotland exclusively, but he did not see why they should not have a veterinary college in Edinburgh as they had a College of Physicians and a College of Surgeons, or why the metropolis of Scotland should not in that matter be in the same position as London. He trusted the committee would be agreed to, and take such steps as would secure a charter for a college in Scotland at the present time. The death of Professor Dick, who had made some provision for the establishing of a college, seemed to be a good time to move in the matter, and one at which it was likely to be granted.

Mr. RAMSEY, Whitehill, said that the preamble of the bill was to prevent any person who had not obtained the diploma of the Royal College of Veterinary Surgeons from assuming the title of Veterinary Surgeon. By this, no person possessing the diploma of the Highland Society would be entitled to assume the title of Veterinary Surgeon at all, though he were more eligible than others. He certainly should not like to sanction any proposal without knowing what the bill was; but it seemed to be a very short one, and two lines showed entirely what it was. It appeared to him there could be no doubt regarding the propriety of their petitioning against the bill, for it aimed at the very basis of the Highland Society's diploma. He seconded the proposal to petition against the bill.

The SECRETARY said that he had received a letter from Mr. Duncan M'Laren, M.P., intimating that Mr. Holland had withdrawn the bill. He might mention that Mr. Hall Maxwell had carried on correspondence in connection with this subject, and on his suggestion he (the Secretary) had called a meeting of the Directors, but all he had to produce was this letter of Mr. M'Laren's, which prevented their being able to take up the subject. Hence the reason why the bill was, he believed, in committee while they were deliberating as to what was to be done with it.

Mr. HOPE: Mr. M'Laren is not opposed to the bill.

The SECRETARY said he had seen Mr. Harris yesterday at the City Clerk's office, who informed him that a letter from Dr. Burt had been submitted to the Council, and that the Town Council had remitted to the Lord Provost's Committee to use their utmost endeavours to frustrate the bill. Last night Mr. Marwick had been instructed by telegraph to confer with Mr. M'Laren, Mr. M'Lagan, Sir W. Maxwell, and the Duke of Buccleuch on the subject.

It was then resolved that a committee be formed, consisting of Sir A. C. G. Maitland, Dr. Burt, Mr. Campbell Swinton, Mr. Hope, Mr. Goodlet, Mr. Dunlop, Mr. Sadler, and Mr. Gillon, to promote the object of obtaining a charter for a veterinary college for Scotland, and to petition against the bill now in Parliament. They were also instructed to telegraph to Mr. M'Laren, Sir W. Maxwell, and the Duke of Buccleuch, to oppose the bill on behalf of the Highland Society.

The Marquis of TWEEDDALE, in submitting the report of the committee appointed to report on the progress of steam-cultivation as carried on in East Lothian, said that specimens of instruments employed, by the most experienced manufacturers, had been in operation during last autumn and the spring of this season, with the exception of one belonging to Mr. Henderson, of Longniddry, which had been working since the middle of March last. It was the intention of the directors to extend the period of observation in steam-cultivation to the whole year, in order that they might have an opportunity of examining the different modes of stirring the soil, as well as the instruments that had been brought into use and had been employed since steam had been brought so much into use in agriculture. It would be one of the great objects of this committee to inform those that wished to engage in steam-cultivation all the secrets necessary to be known in regard to it. They would have an opportunity of showing the expense of the engines, of the apparatus, of the tear and wear, and the number of men to work it, and all the other contingencies; as also the amount of labour that could be performed within a specified time. The following is the report: "On the 7th of February last the directors appointed the following committee to report on the various systems of cultivating by steam: The Marquis of Tweeddale, K.T. (chairman), Professor Macquorn Rankine (consulting engineer to the Society), Mr. Gibson, Woolmet (chairman of the machinery committee), Mr. Slight (curator of machinery), Sir Thomas Buchan Hepburn, Bart., Mr. Henry Stephens, Mr. Gray, Southfield, Mr. Mylne, Niddrie Mains. On the 19th and 20th March, the committee inspected the machine in operation on the following farms in East Lothian: Terrygate (Mr. Sadler's), Fowler's single-engine; Castle Mains (Mr. Todd's), ditto; Queenston Bank (Mr. Begbie); Fenton Barns (Mr. Hope), Howard's; Drem (Mr. Reid), Coleman's. And on the 4th of May the committee inspected Fowler's double engine at work on Mr. Henderson's farm of Markle in the same county. A set of queries to be answered by the manufacturer and the farmer has been issued to 438 parties now using steam-ploughs or cultivators in England, Scotland, and Ireland. Many of the farmers have already given most elaborate answers, though the returns of the schedules is not due till the 2nd of July."

The committee was re-appointed.

Mr. MURRAY, of Dollerie, in the absence of Mr. Mackenzie, of Dolphinton, remarked that, in conformity with the authority given at the general meeting on the 17th of January last, the collection of roots, seeds, woods, and other articles of produce in the Society's museum has been entirely made over to and accepted by Government for the Museum of Science and Art in Edinburgh. This has enabled the directors to effect a very convenient arrangement for conducting the Society's business. The Albyn Place property has been disposed of, the first floor of the museum has been converted into offices, including a board room, and the whole business of the Society will, in future, be concentrated in George IV. Bridge. Mr.

Murray concluded by reporting that the price of the Albyn Place House has been invested in railway debenture; and, though the chambers were not quite completed, the secretary would be found in the hall.

Mr. **Goodlett** called attention to the fact that by the Privy Council regulations regarding the removal of sheep, there was very serious inconvenience in the county of Forfar. No sheep could be removed within ten miles of an infected place, and these infected places being spread at intervals all over the county of Forfar, it was impossible to remove sheep at all. He could not send his sheep to a grass park a mile off without breaking the law. So urgent was the case that he thought the directors should be instructed by the meeting to represent to Government that the regulations should be so altered that it would be in the power of parties to move sheep from a place not infected to another place not infected, with the permission of the local authority. The present restriction was the more unreasonable, as cattle, which were chiefly subject to the disease, could be removed though within a mile of infection. He proposed that the meeting should petition to have part of the 47th section of Orders struck out, prohibiting the removal of sheep within ten miles of infection.

Mr. **Russell**, Pitmuir, maintained that the Privy Council Orders did not prevent the removal of sheep to the extent supposed by Mr. Goodlett. The only restriction was that once they put sheep into an infected district, they could not get them out again. The word "district" was distinctly stated in the Act to signify the jurisdiction over which the local authority extended.

Mr. **Goodlett**: What then about the ten-mile regulation?

Mr. **Russell**: Well, that is a serious enough matter, and I believe the Lord Advocate, in representation, is preparing a measure to obviate the difficulties of removing sheep from one place to another.

Mr. **Harvie** said he was perfectly certain that the simple object of that 47th clause was to prevent wintering hogs going to the Highlands.

Mr. **Campbell Swinton** said there could be no doubt that the words complained of in that 47th section were allowed to remain by inadvertence. The clause was intended to apply only to one district of Scotland, and was put in to prevent sheep coming back from winter quarters to the south of Scotland, without the permission of the local authorities. That had, however, been afterwards provided for by the insertion of the 49th clause, and the 47th was allowed to remain by inadvertence.

Mr. **Swan** complained that, although they had now no diseased animals in the county, the regulations had been made more stringent instead of being relaxed. He moved that, "whereas the restrictions now placed upon sheep are unnecessary, these animals not being subject to rinderpest, except under extraordinary circumstances, the society petition Parliament to repeal the Privy Council Orders, so far as sheep are concerned."

Mr. **Walker** of Borland seconded Mr. Goodlett's motion. It would not be safe for the Society to enter upon subjects which were controverted. They had better err on the safe side. He considered that the powers given by the 4th clause were quite sufficient, and objected to Mr. Swan's wholesale motion.

The **Secretary** said the motion was incompetent, because by the by-laws notice of a petition must be given a week previously to the Board of Directors. At present they could merely remit to the Board of Directors to petition from this meeting.

Mr. **Goodlett** accepted the suggestion that the matter be remitted to the Board to petition Parliament.

Mr. Swan's motion not being seconded, Mr. Goodlett's was carried unanimously.

A vote of thanks to the Chairman concluded the proceedings.

LAND DRAINAGE AND WATER SUPPLY.

MIDLAND FARMERS' CLUB.

A general meeting was held in the Assembly Room at Nock's Hotel, Birmingham, on Thursday, June 7, when a paper on "Land Drainage and Water Supply" was read by Mr. J. Bailey Denton, C.E. There was a good attendance, Viscount Sandon, the President, occupying the chair.

Mr. **Bailey Denton** commenced with a reference to the increase of population in manufacturing over agricultural districts, pointing out Warwickshire and Herefordshire as examples, and said that one of the most important questions of the day was, not how the population of large towns—which are strong because they are concentrated—should be supplied with water, but how those small communities and scattered bodies, who are weak because they are scattered, should have any water at all during periods of drought. The relation of supply and demand would perhaps better be appreciated when it was remembered that the original source of all water supply was rain, the average fall of which might be taken as constant, while the increase of population and manufactures progressed at the rapid rate pointed out, and sanitary and home requirements were overtaking us at a more rapid rate still, all calling for more water. In the west midland counties the proportion of the rainfall, upon which the perennial or summer supply of our rivers depended, was between four and five inches annually; but when meteorological conditions accidentally concurred to reduce the quantity, the flow of our rivers was reduced accordingly. As the population increased, with the liquid refuse from towns and villages flowing into them in some way, and their diminution by the abstraction of water, they would become more and more polluted. One inch of rainfall on each acre of surface is equal to 100 tons, or 22,622 gallons—sufficient to serve three people with 20 gallons a day for a year. The county of Warwick contains 563,946 acres, and has a population of 561,855 souls; and Stafford 728,468 acres, and 746,943 souls, making a total of 1,292,414 acres, and 1,308,798 souls. The counties of Lincoln and Norfolk contained 3,129,758 acres, and a population of 847,044. Thus in this district there was one acre of surface to each unit of population; while in the purely agricultural districts specified there was as much as four acres to each person. If he was right in taking four inches as the average discharge from the land, there was a perennial supply to the river of eighteen times as much as the whole population would require for use at an average of twenty gallons each. Although that might at first sight seem ample, they must remember it represented an average, and this was dangerous data, and it was for times of scarcity and drought they must provide; and knowing that what had occurred might occur again, of sufferings from want of water, and the progress of trades and manufactures, they would agree with him that they could not long continue to draw upon the rivers without restriction, and would see how important it was to look the future in the face, and make provision for it. Mr. Denton then pointed out that if the supply of water was to be improved, it must not be by lessening the perennial supply, but by collecting and preserving some portion of the rainfall, which was now lost in floods or vapour, either for direct use or for compensating the rivers for what we took out of them. It would be seen that the greater the extent of surface upon which to operate the more facile the means of obtaining what was wanted; and seeing that the time was come, or near at hand, when each district must look at home for its supply of water—*i. e.*, that the proportion of a watershed must depend upon the rain that falls and the rivers that run within it, he thought they would agree with him the subject was worthy of their serious attention. This town occupied a central position in the new red sandstone formation, which contained a greater proportion of wet land than any other geological formation in England. It owed its saturated condition of surface not to the preponderance of clay land, but to the physical characteristics which marked its soils and outlines and attended its position. He referred to the alternation of beds of free soil with clays and marls; the mixture of these earths in all sorts of disorder, and the comparative level or gently undulating character of the surface existing in immediate proximity to higher grounds, which, from the outcrops of strata, throw down the rainfall upon their less elevated neighbours. It was these features which suggested the means of providing a constant water supply to small towns and villages which were located in the formation, and which rendered the new red sandstone especially interesting to the engineer, who would make drainage the vehicle of supply. Systematic drainage, devised with proper regard to geological features, might be made the means of discharging for profitable use that water which was either evaporated for want of drainage or thrown to waste for want of united action when drainage was being carried out. In instances of his own operations he had been enabled to apply the water of drainage to profitable purposes, and he was aware of several good illustrations where it had been turned to account; but this had only been managed where it could be done without any outlay beyond what was essential for the drainage of the land itself; for where the cost of drainage was charged upon a farm tenantry every means were used, and ought to be used, to keep the cost down. Thus it was that every extra expense to gain incidental benefits, such as water supply, however beneficial the result might be to villages and cottages, was naturally resisted by those upon whom the repayment of cost would fall. He was conducting the drainage on the estates of Lord Cholmondeley and Lord Combermere, where the drains had thrown out a constant flow of water in various parts, and they had created a number of springs which ran in summer as well as in winter, some of which had been applied on the estates. The authorities of the town of Nantwich were desirous of appropriating two of those drainage springs to augment the water supply of the town, and the conviction that such utilization might become frequent, if not general, throughout the new red sandstone formation was a reason of his addressing them that day. Mr. Denton spoke of the scarcity of water in the Midland counties, which had been particularly severe during the last two summers, and expressed his strong conviction that the present disregard of the water economy of our country was a national disgrace. Water as a motive power was the cheapest of all agents, inasmuch as when once obtained it costs nothing to maintain. As a highway for commerce water was cheaper than railways for many descriptions of merchandize; but these considerations were secondary to the fact that a large portion of the small towns and villages suffer from a deficiency of water, and that there was no reason why such should be the case. At present, as was stated by Mr. Benjamin Shaw, at the Society of Arts, in November, we are just in that condition with regard to water supply as highly to favour the advent of cholera. With this state of things existing in our rural districts, all parties were becoming impressed with the disadvantage of abstracting water from one district or valley and applying it to another; and a case had occurred in which the water due to the Thames water-shed had been abstracted and thrown into the Severn, by which the Thames lost sufficient to supply 150,000 people. This robbery had been effected because the public had had no protector. Although the quantity of water evaporated from the surface was reduced by drainage, and the source of rainfall thereby proportionately weakened, the result was to augment in its aggregate quantity the discharge into the rivers. If the general effect of underdrainage was to increase, in an irregular manner, the water supply, there were points bearing upon our water economy which should have effect in governing the mode in which the works are carried out. It should be understood that the rate at which water was discharged from the land depended upon the nature of the drainage works. In underdrainage it depended upon the number of drains put into the soil; and in certain soils if a greater number were adopted than were absolutely necessary for setting the water in motion not only did they operate to the serious derangement of the river systems, but to the detriment of the productive powers of the land itself. Much land of a free character was being drained by a uniform system of parallel drains, which if differently treated would be capable of advantageously sustaining, instead of injuriously deranging, the water supply, and this, too, with a better effect on the productive quality of the land itself. These remarks applied to underdrainage. There was another branch of drainage which, though at present affecting the water supply of rural districts in but a slight degree, would, as examples became more numerous, affect it very greatly. Our country was divided into numerous watersheds drained by rivers which flowed down the main valleys, and are fed by tributary streams in minor valleys within the same watershed. Many of these minor valleys were water-logged, and some few of them had already become the scene of operations under the Drainage Act of 1861, by which they had been formed into drainage districts. After drainage, the water being discharged in winter as quickly as possible, it overloaded the main channel and collected in the lower valley, and not only did injury there, but interfered with the *régime* of the main rivers. When he spoke of the capability there existed for improving our perennial supply, he referred especially to the resources of under-drainage, inasmuch as whatever was gained must be an addition to what already existed; for no water could run from the drains until the subsoil had been replenished up to the level of the drains, so that while drainage could not rob the rivers of their perenaial supply, it added to it whatever the drainage took from the atmosphere. This acquired water he designated "new water," and it was our duty to preserve and apply that water profitably. It was not, he submitted, sufficient for the legislature to provide a means of improving the land by drainage, without providing also a means of conveying the discharged water safely to its ultimate destination; and if in addition to that it was admitted that drainage might be made the means of supplying a great want, it became much more incumbent upon the authorities to deal with the whole matter as one great national object, extending beyond the works of drainage and water supply to the purification of rivers, the maintenance of river fisheries, the irrigation of river-side meadows, and the canalization of rivers for navigation. The maintenance of a full flow of water in rivers was quite consistent with the attainment of all those objects; and each object was better effected by the maintenance of high rather than low water in the river. Nothing was more erroneous than to suppose that meadows by the side of rivers could only be properly drained directly into them. Mr. Denton proceeded to show how the water of drainage might be collected and stored in reservoirs for use in small towns and villages, premising that in many parts of Staffordshire and Warwickshire it would be quite within the pale of capability to combine several towns or villages into one district of supply, which would allow of the reservoirs being sufficiently large and deep to secure better water than could be obtained from smaller ones. In those cases where there existed a constant flow of water in the shape of a stream near at hand, it might be hardly possible profitably to improve the supply, though as compared with the water of under-drainage it might be hard and inferior. When the relative height of the stream, and the town would allow of the use of a wheel or ram to raise the water direct to the head of the village, it would be an easy matter to supply all the houses in the village with water at high pressure, and, of course, the plan would be the best that could be adopted. When the stream, however, did not have sufficient flow in summer to supply the village, it would be desirable to collect the water when the stream was at its height, and of sufficient purity, in a reservoir, from whence to raise it by that kind of power which the available fall would best permit. In some instances a stream flowing at a greater elevation of the village might be made the means of filling a reservoir in the winter without the aid of any artificial power. In many instances, even where streams existed, a better supply might be obtained by the underdrainage of land; and if they resorted to it, they had data which would quite satisfy the most fastidious inquirer, that the minimum discharge would afford a sufficient quantity of the very best water if the area of drained land were sufficient. It was surprising, too, how few acres of land would be sufficient for the purpose. The mean discharge of drained land might be fairly taken at 100,000 gallons per acre. The water of underdrainage was free from all animal and vegetable matter, for the soil through which it passed absorbed all ammoniacal matter, and formed the best chemical filter that was known. Analysis of drainage-waters had shown its superiority over other supplies. Excepting in a few cases, the water of drainage may not be found applicable to large towns, though especially suitable for small ones. Mr. Denton entered into calculations to show that a village of four hundred inhabitants could be supplied at a total outlay of £415. Assuming the number of houses or cottages to be one hundred, it followed that the cost per person would be £1 0s. 9d., and the cost per house £4 3s. If the cost were charged upon the houses, and the money were borrowed to do the work, it would be repaid by instalments, with interest, in thirty years at 6¼ per cent., and the annual sum would amount to £26, or a charge upon each house of not quite 5s. 3d. per annum. Of course it was assumed that there was land above the village that required drainage and would supply the required water, and that the reservoir should be so much above the village that by means of iron pipes, with stand pipes and taps, the water could be delivered down the street at convenient places for the use of the poor. He did not affect that the making of small reservoirs was altogether free from objection. He fearlessly stated, however, as the result of many years' experience, that the suggestion was practicable and tangible, and that if carried out it would be a great boon to a large part of our rural population. If the necessity of supplying our villages with water was once fully admitted, there would be plenty of means found of improving upon the suggestions he had made. No one who understood the matter could think that small and comparatively shallow reservoirs would be equally good with large and deep ones; but, at the same time, those who were locally acquainted with the destitute condition of many of our villages, and the fact that a large proportion of our farm-labourers now drank the water of existing small ponds and surface ditches, would agree that to collect the pure water of under-drainage in winter, and supply it to the cottages through pipes from a reservoir, properly made and protected, would be a very great improvement, and quite worthy of legislative support. A valuable suggestion had been made that for each village a receiving area, with a paved surface, should be formed, and should be available for other special purposes as well, so that the rain as it fell might not be able to penetrate, but be thrown off into an underground tank, in the same way as it passed from the roofs of houses. This idea was very simple and ingenious, and might at some time or other be brought to hear.

The President proposed a vote of thanks to Mr. Denton for his very exhaustive, able, and well-considered paper, which, he might remark, was not the contribution of a member of their own body, but of a gentleman who had kindly replied to an invitation to lay before them some of the results of his very great experience. The question to which it related was one of the most prominent social questions of the day, and one the importance of which would be recognized in this town as well as in other parts of the country. Water in the wrong place was an enemy, but in the right place one of our greatest blessings. They, as agriculturists, know how water had injured them on their undrained lands, and how, during the last year or so, they had felt the want of it, not only upon their land but for their flocks and herds. One point which he would venture to suggest for consideration was the effect which railway cuttings had on the water supply. There were districts in which water reserves were carried away unmistakeably by those cuttings, and allowed to take its own course. Some of their best springs were allowed thus to run to waste. He hoped they would in time be able to utilise that water. With regard to the general use of water-closets all over the country, as spoken of by Mr. Denton, considering the immense value of what was there mixed with water, he was a little sceptical as to their advantages.

The Mayor seconded the motion, which was carried. Mr. Denton had, however, left the room at the conclusion of his paper, in consequence of an engagement at some distance from Birmingham.

It was afterwards determined that the paper should be printed; and, on the motion of the President, the general question as to the printing of papers was referred to the committee, with instructions to report to the next meeting in October.

Mr. Chawner said Mr. Denton had gone a little beyond the real object of the meeting, which was to consider how to drain land. He did not dwell much on that part of the subject, believing as he did that no general rules could be laid down, and that soil, situation, and other circumstances of a locality must all be taken into account. But he had told them how to consume the water they derived from their land—that in carrying the water away from their land they believed they were getting rid of an evil, when in reality they were not only getting rid of an evil from the land as regarded its capability of producing crops, but they were actually throwing away what would be a blessing to all who wanted water, which people did in every possible direction. When they drained the water from their farms, they did not care what became of it, but Mr. Denton showed them how they should utilize that water—how they should avail themselves of it, and enable their poorer neighbours and others who desired it to benefit by their previous labours. He thought they owed a great debt of gratitude to Mr. Denton for bringing that particular branch of the subject under their notice. In his (Mr. Chawner's) opinion he dwelt a little more on the value of surface water, as regarded the supply available for domestic purposes to the population, than he could justify by any experience. It was perfectly true that Glasgow, which it was supposed was supplied with the largest possible quantity of pure water, was put on short commons because two lochs on which the city depended were very much exhausted, and the inhabitants came to know that they must not depend on surface water for the supply of all household and sanitary purposes. Mr. Denton made a remark relative to the taking of water from a locality in Oxfordshire, observing that one district was being robbed by another of its water supply. But he forgot that the House of Lords had decided that there was no property at all in subterranean water; and as it was probable that to the subterranean water the population of this country must look for their ultimate supply for domestic and sanitary purposes, it was exceedingly important that the law on the subject should be thoroughly understood. Depend upon it the population would ultimately come to the principle of artesian wells, and obtain from subterranean depths, especially of the red sandstone, that wholesome water which was as necessary for the population as bread.

Mr. Brawn said with regard to draining land for agricultural purposes, speaking from his own experience, there was nothing like going to a fair and reasonable depth. He had practised draining to some extent, and he never found any satisfactory results from drains of less than 3 feet. He had tried 2 feet, and he believed he might just as well have put the money into the cart ruts; but he had tried 3 feet 6 inches and 4 feet with good results. He, however, did not mean to lay that down as an absolute rule for any farmer, but offered it as a suggestion of his own. In respect to the supply of water for villages and small towns he knew its importance in every sense. He entirely agreed with his lordship's suggestion as regarded water closets; and with regard to their use in villages and small towns he believed they were not desirable. In fact, he very much questioned whether they were desirable at all.

Mr. Wiggin said he was an advocate for the papers read before that Club being of a practical character; but, although the one which Mr. Denton had favoured them with had no direct bearing on agriculture, it related to a question of great importance, not only to the Club, but to society at large. After remarking upon this point, he alluded to the present filthy condition of our rivers as affecting the water supply of both town and country; and, with regard to the fouling of the Tame by this town, he remarked that it would be desirable if any of their agricultural friends could suggest some means or other by which the large amount of sewage brought into the rivers could be carried to their crops, and the water purified before it entered the stream.

Mr. Masfen said Mr. Denton had referred to country villages where the supply of water to the cottages was derived from ditches. He (Mr. Masfen) was happy to say that his experience did not furnish him with an instance of such a state of things. Property had its duties as well as its rights, and he believed that in most places that duty had not gone unattended to. If the case was as Mr. Denton had stated it, they might hope it was special to the eastern counties where that gentleman resided.

The President said the paper had dealt with an important feature in regard to the drainage of land—what they should do with the water. After all, the question was whether it was wise to get rid of the water as quickly as they could—whether in some cases they had not been too hasty in carrying it off, and whether they were not rash in sinking drains right and left. In some cases it might have a wonderful effect; but last year they were a little startled by the extraordinary drying up of pasture land; and he thought it was worthy of consideration whether or not it was in consequence of too rigorous a system of drainage.

Mr. Wright remarked that he thought the question of drainage might be considered in two divisions—as affecting the land, and as affecting the supply of water. His lordship had given a good and sufficient reason for not entering into any details with respect to drainage, because there were so many considerations to be observed before an efficient plan could be carried out in any particular district. Farmers were often heard to complain that a charge was made upon them for draining, done either unnecessarily or on a wrong system, and producing no benefit to them. That the paper they had heard was an important one every one at all acquainted with the great want of water in many of our villages would at once admit. His friend, the Vice-president, said he knew of but few villages in the state described by Mr. Denton, but his (Mr. W.'s) impression was that the description was applicable to many parts of the country, and that a good supply of pure water was greatly needed in a large number of villages. He thought that when the report of the paper read that day went forth, it would impress thoughtful men very much with regard to their duty in respect to the water supply of villages and small towns. It seemed almost too much to hope that what Mr. Denton recommended would be fully accomplished; but when existing evils were so forcibly pointed out, efforts might from time to time be made for their removal, and one of the greatest possible benefits would be in this way conferred upon our rural districts.

After some further discussion, the President left the chair, and the proceedings terminated.

THE HANTS AND BERKS AGRICULTURAL SOCIETY.

MEETING AT READING.

After going for four years on its own account, the Hants Agricultural Society has now entered into a partnership concern with the adjoining county of Berks, the happy union being celebrated by a meeting at Reading on Friday, June 22. Every allowance must of course be made for the difficulties which such exhibitions have this season to encounter; though, however ready to admit the force of unfavourable circumstances, it is still evident enough that Hants and Berks must make a deal stronger stand to take any rank in the agricultural exhibitions of the year. But for the proviso already referred to, the occasion would have required little notice, the most striking feature, in fact, being weakness, where one might have naturally expected something like excellence, and a general tameness, perhaps more or less inseparable from the good old town of Reading, from time out of mind one of the dullest places in Christendom. The entries, moreover, told a deal more of Hampshire than Berkshire; and, numerically at any rate, the best-filled classes were those for Hampshire and West Country Down sheep, where the chief honours were taken by Mr. Terry, of Dunmer; Mr. Palmer, of Cliddesden; the Messrs. G. K. and A. Budd, Mr. E. Olding, of Amesbury; Mr. W. E. Fitt, of Littleton; Messrs. J. and M. Arnold, Mr. Barton, of Hackwood; Mr. Moore, of Littlecott; and Mr. Morrison, of Fonthill. Of these, Mr. Terry's ewe tegs were level and uniform in their character; Mr. G. K. Budd's old ewes, another nice lengthy lot; and Mr. Olding's ram, a deep broad sheep. In the mixed section of Hampshires or West Country Downs, none of the shearling rams showed much merit, Mr. Barton's first being a loose up-and-down animal; Mr. Olding's second looking very off and slack in his back, and Mr. Moore's third as plain as a pikestaff. The Hampshires are no doubt useful sheep, who can rough it and thrive where the more delicate sorts would dwindle away; but they require a deal more getting up than they evinced here, and one would hardly take to such a flock from what he saw at Reading. Amongst the other breeds, Mr. Beale Browne and Mr. King Tombs were first and first, or rather first and second each in his own class, with some nice stylish rams, which, with Lord Radnor's Southdowns in the extra stock, were the really prize sheep of the show; though Mr. Walter sent a capital pen of fat lambs, and Colonel Loyd Lindsay half a score of fat sheep, by a Cotswold ram from Down ewes, that were surely superior at all points to Mr. Henry Barton's coarse ragged lot, to which the judges gave the preference. Mr. Barrett took a couple of prizes for ram and ewe lambs of "any other" or cross breeds; but the competition was very small, and in one or two of these classes there were no entries. Strange to say, neither Oxford Downs nor Southdowns offered any front in the classes proper; and Berkshire, if we are to go by such a curiosity as Mr. Willoughby's ram, has still some very primitive notions of either breeding or showing a sheep.

There were only two cart stallions entered, both the property of Mr. Terry, of Dunmer, and both meriting the prizes awarded. We spoke to the second here, Wanderer, when we saw him at Salisbury, as a nice stylish old horse; but the Clydesdale by the Duke of Hamilton's Battersea stallion was quite off at the West of England Meeting, and removed before we had an opportunity of looking him over. He is a grand weighty young horse, and deservedly taking in the district through which he travels. The two-year-old stallions were a very poor lot, as we question whether Mr. Barrett's light plain animal was really the best of them; but the mares and foals and cart mares were far better, Colonel Lindsay taking first and first with two very smart useful mares, Lord Radnor sending his handsome Suffolk, and Mr. Fuller of Caversham another good one, backed by a famous foal. That familiar name on the prize-list, Mr. Phillips of Ardington, had the best, or rather better three-year-old, for there were only a couple in the class, and Lord Radnor's two-year-old filly turned the tables on Mr. Baily's roan, who beat her at Salisbury, and we certainly go with the second reading. Mr. James Williams of Enham won his Reverend brother's—that is, Mr. Terry's—cup with a really clever hack, up to some weight; and there were two or three ponies amongst the extra stock, such as Mr. Salmon's and Mr. Palmer's entries, so neat and true as to well warrant the extra premiums awarded. Still, we did not see them out, as the Stewards would appear to have little notion of how to make the most of a horse-show.

Naturally enough, perhaps by far the most suggestive section of the exhibition was that devoted to pigs, as to Berkshire pigs above all others. Indeed, we will undertake to say that so indifferent an entry of Berkshires could not have been obtained out of Berkshire. There were show pigs with heads as long as walking-sticks, with backs as sharp as razors, and of a "quality" that defies any adequate illustration. Still, the judges manfully did their duty, and awarded, we believe, every premium at their disposal. There were certainly some exceptions, such as Mr. Terry's good long sow, with her pretty litter, tracing back to Mr. Hewer's sort. Mr. Clarke, of Altwood, had also two nice sows deservedly placed and commended, whilst Mr. Tombs is rather running away from the Berkshire character, and might cross back again with advantage. Mr. Humfrey, of Kingston, was declared to possess the best boar; and Mr. Walter, of Bearwood, the next best; but neither was really worthy of any distinction; whilst in the other breeds Lord Radnor was first for boars, and second for sows, with some of the Gold Medal whites; and Captain R. P. Warren, of Worting, also distinguished in this mixed company for some of the most wonderful pigs a fancier ever encountered. But then as it is a bit of a compliment to call a man "a long-headed fellow," this may hold good with a learned pig.

We have the word of so high an authority as Mr. Bailey, for saying that the poultry show, so far as it went, was very good; and that the Dorkings, the Game, the Gold-Pencilled Hamburgs, and the Brahma Pootra were all admirably represented. The Brahmas, with more appearance, are fairly surpassing the Cochins; but the Dorking and Game will always hold their own. Many of these birds came on from Salisbury; and Captain Lane, Miss Milwood, Mr. Parlett, Mr. Sidney Dupe, Mr. Crewey, Mr. Pittis, Mr. A. K. Wood, Mr. Pares, and Mr. J. H. Pickles were the principal winners in the classes we have mentioned; whilst Mr. Seamons, of Aylesbury, was first for Ducks and Geese, and Mrs. Lang, for Turkeys.

The Judges for Sheep were:—Mr. W. Humfrey, Chaddleworth; Mr. T. Saunders, Watercombe, Dorchester; Mr. G. Butler, Tufton, Whitchurch. For Horses and Pigs—Mr. J. B. Spearing, Oxford; Mr. James White, Odiham, and Mr. W. C. Spooner, Eling, Southampton. For Poultry—Mr. T. Bailey, Mount-street, London.

There were no premiums for Implements; but Sutton and Sons had a stand of roots and seeds; and the Reading Iron Works Company, Humphries of Pershore, Bradford and Co., Wallis, Haslam, and Steevens, Soper and Hobs, Gower and Son, Plenty of Newbury, Tasker, Priest and Woolnough, and a few others, made up a by no means imposing display of machinery.

Mr. Benyon, M.P., as President of the united Society, was to take the chair at the dinner in the Town Hall; and when we left Reading was manifesting all its wonted vivacity in anticipation of the festival.

THE METROPOLITAN CATTLE MARKET.

Mr. Editor,—I am induced by your article on the discussion which took place in the Farmers' Club last month to address a few lines to you relative to the way in which sales of beasts are managed at the Metropolitan Cattle Market: I refer to the system of selling cattle by means of consignment to a salesman. It will, I think, be easy to prove that whatever the *presumed* advantages of this course may be, it is highly detrimental to the interests both of the meat-producer and the meat-consumer, but especially to those of the former. Of course the argument in favour of the existing method of procedure is, that the salesman being always in the market, and continually coming into connection with most of the buyers who frequent it, he is far more likely to effect a ready and profitable sale than the grazier is himself. So far there is little to find fault with; but when in practice we find that the remuneration per beast allowed by way of commission to the salesman is about 3s. 6d., a new light breaks in upon the subject. Allow me to ask whether it is at all likely that half a guinea for the sale of—say three beasts for £100 is such a sum as would or ought to satisfy a salesman? We must take into account the fact that in order to secure this commission, he has to give up his time to the business, be at the trouble of securing a good connection both among buyers and sellers, pay the proceeds of the sale to the latter by the next post at latest after it is effected, and not unfrequently give a week's, a month's, or even longer credit to the former. In addition to this, the working expenses must be something considerable; for we must bear in mind that the salesman must have offices and clerks, pay helpers in the market, incur a heavy postage-account, and so forth.

In the face of these things, but one conviction can force itself on our minds, and that is that the instinct of self-preservation with which all men are endowed makes the salesmen look out for themselves. For when we inquire into the means of such men, we find they are always reputed to be of good substance, their security is undoubted, and a retired salesman is much oftener met with than a retired grazier; though it is difficult to perceive how all this can be the consequence of the one-half per cent. with which he debits himself in rendering an account to his client. This, and nothing but this, can be a solution to the discrepancy which appears between the prices paid to graziers and those charged by London butchers—a discrepancy which will remain as long as the present system holds.

There appears to me to be two ways in which this state of things may be remedied: one is that already tried, on a small scale, by Mr. Robert Bond, who as an auctioneer disposes of his consignments by an open competition among buyers. Here everything is fair and above-board, the very method of the sale ensuring a faithful return; and it is to be hoped that meat-producers will show themselves alive to their own interest by availing themselves of such a means to promote them. The other way to which I allude is that pursued in the Dublin Smithfield Market, where buyers and sellers are introduced to each other by salesmen, and, after making their own bargain, the salesman is remunerated by an adequate commission. In order to accomplish this, both the buyer and seller are invited to attend the market personally, or to send some one in whom confidence is placed to be a party to the sale; or, where it is preferred, the transfer may be left in the hands of the salesman—that is, the attendance of the seller is not compulsory. If he appears, he is introduced by the salesman to a purchaser, and these parties may then proceed to business in their own way, and buy or sell either with or without the aid of the salesman, as they choose. At the close of the market the salesman hands or sends to the seller a cheque for the amount, *minus* his commission (which, it is needless to say, should be fairly remunerative), taking upon himself the risk of being reimbursed by the purchaser. This system, which I prefer even to that of selling by public auction, presents a strong contrast to the London one, where, if the seller happens to be present, he rarely hears the conclusion of any bargain between the salesman and the butcher, and thus has to depend wholly upon the word of the former as to the amount for which his stock is sold.

Each of the two methods I have spoken of has immense advantages over the one practised at the Copenhagen Fields; and unless farmers and graziers take some steps towards modifying the pernicious system of which they are to a certain extent the victims, they cannot expect to reap a due reward for all the trouble, anxiety, and expense which weigh upon them in endeavouring to feed the multitudes who inhabit the Metropolis. Their desire ought to be to put a stop to the present method of transfer altogether. If, however, that is found to be too strong to give way at once to their united efforts I would suggest that at least, they ought to take means to make the salesmen's commission in some degree commensurate with the work done, in order to do away with whatever incentives there may be to the making of a false return.

My only apology for sending this is the fact that you have yourself opened the subject, and my desire to forward, to the utmost of my ability, the interests of a class, who, in these days of rinderpest and unremunerative farming, ought certainly to receive all to which they are fairly entitled.

I am, Mr. Editor,
Yours faithfully,
RD. GARRETT.

Carlton Hall, Saxmundham, June 7th, 1866.

SUMMER PROSPECTS AND AGRICULTURAL DOINGS.

As your periodical is at all times desirous of contributing to the best of its means every information relative to agriculture and agricultural progress, and also to look onward with the view of providing for its readers salutary cautions and useful suggestions for the future, I, as an old contributor, venture to take something like a general view of our present position and our immediate, or "our summer prospects" as agriculturists. We have had much to contend with during the past winter and spring. The rinderpest has made sad havoc amongst our herds, and brought untold trials and distresses in many a worthy and respectable family. This is a trial of no ordinary character: a correctional visitation from the Divine hand like this must not be passed over as an ordinary circumstance. We are glad the country has so recognized it and that a nation's prayers have been offered, and have, we trust, in a great measure prevailed to cause a material mitigation, if not a total suspension, of the fatal malady. For this very merciful interposition of Divine Providence we cannot be too grateful, and we are sanguine enough to believe that with the continuance of the Divine blessing, and the stringent and persevering course to be pursued by our Government, it will ere long be eradicated. Undoubtedly, it will require the greatest watchfulness and care to fully subdue its attack and stay its ravages; but as the whole country is now wide-awake to its evils, that vigilance will no longer, we earnestly hope, be wanting. It will be absolute madness to be any longer indifferent. Individual carelessness as to its propagation now ought to be visited with heavy punishment—yes, even to extend beyond the customary fine. Is it not a crime recklessly to endanger your neighbour's property? Restitution to the sufferer and imprisonment to the offender would act forcibly to prevent carelessness or selfish and dangerous speculations. When this dreadful cattle plague was nearly at its highest, there came upon us another astounding blow. Our monetary affairs became most alarmingly deranged. Many of our largest banks and discount houses succumbing to the pressure, caused money to become enormously dear, and accommodation extremely difficult to obtain, even by the best and most trustworthy firms. Hence a stagnation in many departments of business has occurred, and although agriculturists are not always the earliest or worst sufferers by these reverses, yet it soon seriously affects them; and wool, that staple produce of a thriving agriculturist, has at once shown it, having fallen 25 per cent.; and these difficulties are still extending. We scarcely take up a paper, but we find the announcement of extensive failures in various quarters for large sums, which all tend to depress agriculture, which, after all, is the chief foundation of a nation's wealth. We cannot at present, however, see a prospect of a low price of meat; but that is mainly owing to a scarcity of animals for fattening purposes, and more particularly of cattle; and in this respect there does not appear to be any probability of increase, as this new trouble, an impending war—a war which may ultimately involve all Europe—may prevent any large importations. We humbly and devoutly hope and pray that such a calamity may be averted, although so imminent. I may here then stop, first to inquire what effect such a war would have upon British agriculture? It would, if confined to Prussia and Austria, have no very great influence either one way or another. It would no doubt cause a slight advance in the price of all agricultural produce, inasmuch as difficulties would arise as to the transmission of produce from the contending countries; there would also be the blockading of ports, the interruption of railway traffic across the countries, the additional costs of shipment, and probably a falling off in the production of Prussia and Germany. Our supplies of cattle and sheep are far more abundant from the countries more immediately west of Prussia and Germany, *i. e.* Holland, Denmark, Belgium and "Schleswig-Holstein." From Prussia we have considerable supplies of corn, but from Austria not much. Hungary sends us both cattle and corn: these supplies I imagine would be greatly interrupted by a collision of the two powers. My own impression is, that a war between these two powers would enhance the price of our agricultural produce from ten to fifteen per cent.; but should all Europe become embroiled, no one can estimate the effect. It would of course be mainly ruled by our position with the nations. We should only war with those from whom we received insult and injury, and who knows from whence that would come? At present there is great hope that we shall be preserved from such a misery. May God mercifully grant it! But I am proposing to take a general view of our present position as agriculturists. Well! *our Agricultural Societies:* one deeply regrets the necessity for relinquishing such exhibitions for the present. It is quite a privation in itself alone. We residents in every district looked forward to and prepared for our own annual meeting, and our great meetings have long become of national importance. We deeply regret that the greatest of all, *i. e.*, our Royal Agricultural Society's Meeting, is entirely abandoned for this year. Take the Bath and West of England Society. There is no society to which British agriculture is more indebted. In 1777 it laid the basement upon which the modern improvements in agriculture have been built. It was long pioneering the way; but, having opened it out admirably, it still keeps a decided lead, not only in agricultural development, but in the promotion of the useful arts and scientific progression. It is no small honour to have taken the lead, or the initiative, in a movement so fraught with good for a nation's welfare. From its example and its succcessful course have emanated many kindred societies, whose united efforts have brought British agriculture to a standard never before reached in any other country. The Bath and West of England Society still continues that lead; and its meeting (the first of the season) has just been held; with the many attractions provided for its visitors, *i. e.*, horses, implements, poultry, dogs, flowers, pictures, works of art, and music; but of course minus the all-important class of cattle, sheep, and pigs, though we think the two latter classes might with tolerable safety have been present. It is these and the cattle classes that draw together men of business. Now, "what a falling off is here," when our great gatherings and our provincial shows are for the season withheld! We fear our implement makers and manufacturers of steam machinery will seriously feel the loss, and it will certainly tend to retard agricultural progress. It is the privilege of every inquiring farmer to attend these meetings in order that he may acquire knowledge of what might tend to his advantage, and act upon it; all this will be delayed for the season. It is true, the Royal Agricultural Society are commendably engaged in ascertaining the value of steam cultivation and its adoption, adaptation, and progress throughout the kingdom. This of itself is a great redeeming feature in its annual course. We hope the inquiries of the three committees appointed to make the investigation will take the broadest view of their arduous task. It is not so much the work and cost of the work that a steam cultivating apparatus may achieve, but the collateral and relative advantages to be derived, *i. e.*, the improved condition of the soil, the additional croppings insured, &c., &c., together with economy in horses and horse-implements, &c., &c. It would not be amiss if these committees as an appendix to their reports would dwell upon any novel feature in management to be observed on the farms or district visited, any facts of extraordinary success in breeding stock, in cultivation of any particular grain, roots, or seeds, or artificial grasses, or the use of manures.

These few remarks will suffice to show that agricultural progress is not likely to receive much additional impetus during the summer upon which we have entered. I will now say a few words upon our more immediate business prospects. The rinderpest having destroyed so many of our herds, and rendered the grazing of cattle very hazardous, caused an unusual, if not an unnatural rise in the price of sheep. This, to the sheep-grazier, made sheep-grazing also a very problematical speculation. Sheep were bought-in enormously dear; but few graziers dare buy cattle. Chiefly those whose lands were alone qualified to graze cattle were the purchasers, and they had them at their own price; consequently cattle-grazing will be a profitable business, providing the rinderpest abates. Sheep-grazing, however, cannot be profitable. Wool has already receded in price from 20 to 25 per cent., and the price of mutton, taking it at the highest point, in nearly the same proportion; and unless war should break out, it in all probability will be still lower, as the supply of fat sheep is by no means inconsiderable, and mutton will be found equal to the demand. But it will not be so with beef, as so many thousands of grazing-cattle have either died of rinderpest, or been prematurely slaughtered. Beef must be dear, in proportion to mutton; and a general war would make it frightfully scarce and dear. Pork is likely to recede in price. The breeding of pigs soon creates a supply of pork. They are wonderfully prolific, and everybody is breeding and fattening pigs—many breeders to a large extent in substitution for cattle. Good breeds of swine come to extraordinary weights in a very short time, under good management and suitable food. Meat, however, always bears a proportionate price. If beef is very dear, other meat must partake of its price. Consumers won't buy beef at 10s. 6d. per stone if they can buy pork at 7s. per stone; the prices therefore assimilate. We must not look for either very high or low prices for any kind of meat during the present summer. The price of beef will mainly rule the market.

The state of our crops is another important feature in "our summer prospects." The drought did cause considerable alarm throughout all our chalk, sandy, and clay districts, and we fear the crops in these districts must cut up light. Upon the loams, fens, and marshes the prospects are good. The beautiful rains and charming weather we are now experiencing will do immense benefit, and may probably bring up the cropping of the whole kingdom, taken collectively, to a fair average produce: we sanguinely hope it will. The potato crop, which has of late years assumed a national importance, cannot, I think, be a full average one: it was got in badly: it has come up irregularly, and, till the late rains softened the cloddy soil, was almost unmanageable A considerable breadth has, however, been planted, which is a saving point as to a future supply. Of hay there will be an unusually large supply. Much land has been laid-in to meadow, owing to the high price of stock. It will, however, be all wanted during the winter, as much straw will be converted into manure by sheep instead of cattle, and hay and roots must be their food. Of green-food crops the prospect is good. Mangolds come up well, and are growing fast. Swedes are going in favourably, and will soon be up. Turnips and coleseed will have a fine soil for a seed-bed, as the land is now working favourably. We look forward to a good supply of winter food, which is one of our chief agricultural blessings. We also look forward to a good average corn crop, with a prospect of its making a more remunerative price than we have lately received. We believe that our next winter's foreign supplies will be less than for many years, and more particularly those from America. F.

THE WARRANTY OF CATTLE.

MULLETT *v.* MASON.

At the Court of Common Pleas, Westminster, on Wednesday, June 6, the following decision was come to by the judges sitting in *Banco*—viz., the Lord Chief Justice Erle and Justices Williams, Keating, and Smith.

This was an action tried at Stafford assizes, before Mr. Baron Pigott, when a verdict was found for the plaintiff—damages, £109. A rule having been obtained to reduce the amount of damages by £98,

Mr. Huddleston, Q.C., to-day showed cause against the rule, and Mr. H. Mathews appeared in support of it.

The plaintiff and defendant, it appeared, were both cattle-dealers, and the defendant sold the plaintiff a cow, representing that it had come from his father's farm, and was not a foreign cow, whereas he had bought it in London, and it was a foreign cow, as the defendant knew. The plaintiff, seeing the cow look ill, required a warranty that it was free from rinderpest, which the defendant gave him. The plaintiff, relying on the defendant's assertions, placed the cow with his other cows. The consequence was that five of them caught the pest from this cow, and died, as well as the cow itself for which the warranty was given. The plaintiff was also compelled to sell 17 other cows at a loss in consequence. The jury gave him £98 for the price of his five cows and damages, and £11 for the price of the cow he had purchased of the defendant. It was contended, in support of the rule, that the plaintiff was only entitled to the price of the cow sold under the warranty, and not to the damages consequent on the other cows having caught the cattle disease from it; but

The Court were of opinion that the rule ought to be discharged. It was clear that if a seller made a false assertion to a buyer which induced the buyer to buy, the buyer had got a right to act on that representation as if true; and if it turned out to be false, the seller must pay all the direct consequences that in the usual course of affairs would result to the buyer. Here the seller was answerable for the consequences which had ensued to the plaintiff from his acting as if the cow was free from infectious disease. Being a cow-dealer, he had placed the cow with his other cows, and the cow being diseased had directly infected five other cows of the plaintiff, and the defendant must pay the value of them.—Rule discharged.

THE IMPOLICY OF INACTION.

The impolicy of inaction is becoming hour by hour more apparent. No man in these days can afford to stand aside, unless he makes up his mind to be lost; and the agriculturist, at a time which may be recorded hereafter as a crisis in his fortunes, should perhaps above all others be moving. The Bath and West of England Society may not from a pecuniary point of view have profited much from its Meeting at Salisbury, but the Show has kept the Society's name alive and its place in the race. Although the breeders of stock were necessarily forbidden, there was not an implement maker, mindful of his own interest, but who took care to be well represented during the past week. Other institutions are as keenly alive to the occasion; and in Yorkshire Mr. Parrington declares he can dispense with the Shorthorns, so well shall he be backed by horses, hounds, sheep, and pigs. From Birmingham, the Midland Counties Council has just issued a very well arranged list of premiums for the coming Horse Show, and with every chance of a successful result, for the Islington Exhibition is known to have paid, despite the almost ludicrous mistakes of the management. At Bury St. Edmunds the Suffolk people have wisely resolved to have a Show of their own, even if the Royal Society cannot sanction such a course; and again one pauses to ponder over the opportunities for a meeting which the national association might have made up at Bury, with its prize-list for horses, hounds, poultry, and machinery. It is in the last named of these items that the West of England Society still fails so signally. Let the reader only turn to our report of the field-trials at Salisbury, and note how, of a necessity, this reads so flatly and uninteresting; whereas at Bury we should have had every man doing his utmost before a crowd of critical customers, not now to be drawn off to the rings of Shorthorns and Devons, or pens of Downs and Longwools. Then most opportunely the cattle-plague really appears to be dying out, and one asks the yet more directly, "What is the Royal Agricultural Society going to do for its money?"

There was a meeting of the Council on Wednesday, when the following programme was directed to be published, as touching on the chief business of the year: "STEAM CULTIVATION.—Mr. Thompson reported the recommendations of the Committee:—1st. That the inspection shall commence as early in August as the state of the harvest will permit. 2nd. That after due consideration of the 188 replies sent in to the first circular, it appears that three Inspection Committees will be required, and that each Committee will be occupied for a month in visiting the selected farms. That each Committee shall consist of three members, one of whom shall act as secretary and reporter. Members of Council shall be furnished by the Secretary with such information as shall enable them to join the Inspection Committees when visiting their district." This sounds well enough so far as it goes, but the natural question which immediately arises is, why should we not have, or why long since did we not have a Cattle-plague Inquiry conducted on something like the same terms? The Report from the Governors of the Veterinary College to the Council of the Society may be offered as about the best excuse available for anything more not having been done. The Society pays the College so much a year, and the Profession in turn does all it can for agriculture and the Government. We take this to be the essence of the Report, although we should prefer to have this estimated on its merits. Still the Royal Agricultural Society is moving in other ways, and two or three more names are down for the Open Wednesdays. Whatever may be the value of the introductory addresses, it is very remarkable that these Discussion Meetings do not tell with the country, and, as we take it, for sufficient reasons. The Open Wednesdays are not open. It is with a very ill grace that any one under the rank of a live Lord, a member of Parliament, or a member of the Council is tolerated, or suffered to take any part in the debate, and hence the general body of subscribers are gradually getting to keep away from a house where it is clear enough their presence is not wanted. Even so able a man as Mr. Herbert spoke the other day, on a topic essentially his own, as it were with his hands tied; the probability being that he was instructed to reserve himself for the next *Journal*, a work that, we cannot repeat too emphatically, nobody reads. Let the Council think a deal more of its annual show, and the every-day life of agriculture; let the Charter be defied forthwith, and the educational absurdities as speedily abandoned. Let, in a word, the interests of the farmer be really consulted, and the Society may still progress. We feel, however, that this is an old story in our columns; but we are glad to see that others, who take the trouble to think for themselves and have the courage to speak out, feel with us, and protest against a management so monstrously neglecting the duties it was elected to perform. It is consequently with less hesitation than for some reasons we might otherwise have experienced, we avail ourselves of the conclusion of an article in the *Gardeners' Chronicle* of last Saturday, wherein the apathy of the national society is placed in strong contrast with the proceedings of other institutions: "The weekly meetings of the Society evidently need to be reorganised. The subjects should be chosen by those who are in the habit of mixing with farmers, and learning what they are interested in and talking about from week to week. We strongly advise the authorities to take into their counsels Mr. Arkell, of Swindon, who criticised their conduct on the cattle-plague the other day so well; or Mr. Corbet, the secretary of the London Farmers' Club, which seems, under his guidance, generally to do the right thing at the right time. Perhaps they would do well to follow the example of that Club, and offer an honorary premium for essays on the subjects selected for discussion. A piece of plate or medal would be valued more than a sum of money by some of those whose services are most desirable: at any rate, the committee who have the conduct of these weekly meetings ought to have ample funds at their disposal; and services should be purchased if they cannot be otherwise obtained."

INSURANCE FOR LIVE STOCK.

There is no so telling an advertisement for an insurance office as a fire. The whole neighbourhood becomes at once alive to its liabilities, as the premiums increase proportionately with the damage done. And nowhere has this kind of business extended more systematically than in the rural districts. A man now includes such a policy in his outgoings as certainly as he does his rent or his rates. Formerly, if a farmer happened to be burnt out, as likely as not he went round with a subscription paper, or submitted his "misfortune" to the consideration of his landlord. Such a misfortune is no longer admissible; and any one who has neglected to secure himself in this way still knows well enough that he can expect little sympathy from his neighbours should he wake up some night to find his homestead in flames. It is not, however, the ravages of fire only that we have come to guard against, but we insure our crops from storms, our own persons from accidents, and our very lives against the every-day hazards of humanity. In perhaps only one respect does any such plan of provision appear to have failed. If our growing crops in the field and our garnered corn in the stack are alike assured to us by such a means, an often yet more valuable portion of our property has been suffered year after year to encounter all risks without any protection whatever being thought of. As a rule, whilst everybody insures his house and his crops, no one insures the health of his herds or his flocks. The reason for this seeming neglect is evident enough. A merchant with a number of vessels trading in different parts of the world can afford to put one against another; that is to say, an occasional loss comes easier to him than if he continued to insure every ship he sent out. So has it been with our stock-owners. For many years the average loss from disease or from other causes has been so small that people on a fair calculation have found it pay better to take the chance of an occasional visitation than to anticipate such an outbreak. Moreover, like the vessels at sea, cattle and sheep are comparatively scattered; whereas a hailstorm will probably damage every growing plant on the farm, or a fire possibly burn a man fairly out. Hence it arises that Cattle Insurance Companies have taken but little root in this country. Their support has been at best but partial, and anything like an epidemic has generally been sufficient to close their doors. One after another have they thus fallen through, as the great graziers like the great merchants insure themselves, and statistics show that no one is so liable to loss or so likely to claim as the man in a small way of business.

But the advertisement has begun at last to tell here also, when we come to see that a farmer may lose his stock at one fell swocp, almost as quickly as he might the house over his head, or the row of ricks in his yard. To be sure, he had not been led to expect or even to think of such a calamity, for a plague that by precedent has only been experienced at occasional intervals of seventy, eighty, or a hundred years apart, can scarcely be taken within the calculations of common or even extraordinary occurrence, and it accordingly reached us again when in every way unprepared. But we must be unprepared no longer. As the later experience of other countries tends to show, having once got the disease amongst us, we shall be now always more or less liable to its reappearance. It may be smothered for a time, or seem to fairly die out; but we can never be secure, the more especially from our continual communication with parts of the Continent where, for years and years, the contagion has never been thoroughly subdued. Under such altered circumstances it will be necessary for the farmer to adopt a very different line of action to that which he has hitherto so successfully pursued. If from a very proper feeling of self-respect he objects to go round with the hat, or even to ask for compensation from other men through the agency of the Government, there is only one other course open to him, and that is some system of general insurance. If, as we may hope, the plague is subsiding, the Government rate of recompence, by no means a satisfactory plan of proceeding but for the emergency of the case, may go with the evil it was temporarily created to meet, and we must establish ourselves on some far better basis for the future. As will be seen from a report in another page, a very suggestive paper on this subject was read by Dr. Farr at the Royal Agricultural Society's meeting on Wednesday last, embodying a proposal that does not seem to us to be surrounded by such difficulties or associated with such impractical conditions as some of the Doctor's audience would go to assume. National or mutual insurance would be undoubtedly the most respectable means of which the farmers could avail themselves, while we see little or no objection to rendering this compulsory. It is but human nature for men to grow careless as they get quit of their troubles; and without some exacting measure bearing upon all alike, we should have the old story over again, of the many holding off, and the few knocking up the new offices that are pretty sure to spring up so soon as the reign of terror is over. Everything, in fact, is tending in the direction foreshadowed by Dr. Farr. Another learned doctor, whose name is familiar enough to these meetings, comes unintentionally, perhaps, precisely to the same end by another road, when he declares the first step must be to establish a good College of Veterinary Surgeons, or, as he subsequently explained, to "insure" a greater number of duly passed practitioners being posted throughout the country. To what, however, does, or to what will Veterinary Science go, according to its most favoured exponents, but the establishment of some general system of mutual insurance? The veterinarian still steadily maintains that there is, and there can be, no remedy but the poleaxe; and it is against this certain loss that the farmer must provide. Kill the sick, and kill the suspected; not, may be, more for your own interest than for that of others, as the Cheshire farmers are now protesting in a paper which they have drawn-up against "the injustice of the present Compensation Clauses," through the agency of an Equitable Rating Committee. This document, which has been extensively circulated in the House of Commons during the last few days, runs on thus: "It is contended that if it be judged expedient by the Legislature to slaughter all cattle where the disease appears, *with the view to stay the spread of the plague over the whole country*, it is not just that the tax to compensate the owners should be *confined to the locality* in which such cattle are slaughtered. The county of Chester has suffered more from the cattle plague than any other part of the country, the number of cattle killed and died in that county exceeding that of all Scotland and Wales. Cheshire has done nothing to cause the plague; it was imported from abroad, in supplying the great commercial cities with foreign cattle. It is therefore unjust to impose on Cheshire a rate estimated at from 5s. to 10s. in the pound, because it accidentally happens to have nearly all its cattle slaughtered for the benefit of the rest of the kingdom. The compensation only extends to half the value of the cattle slaughtered, so that the owner has to bear not only the loss of half his cattle, but to pay veterinary and other expenses, amounting, in the whole, to an enormous sum. Such a heavy rate on a limited district necessarily makes the misfortune greater and the ruin more complete. The injustice is twofold; for the farmer first bears the loss of half the value of his cattle, and then by the cattle rate he pays his quota of the burden on the full assessable value of his farm—only when utterly ruined is he excused the rate. The stamping out of the disease not only benefits the owners of healthy stock throughout the kingdom, but also the general public as consumers of meat; for if the disease be not abated the price of meat will become excessive.' The one grand inference to be drawn here can only be in favour of some system of mutual or more general insurance, while we regret to see that the Commissioners, in their third and highly illustrated Report, have not gone deeper into this important branch of the subject. In glancing at the laws and regulations of other countries, they only incidentally touch on such means "as making pecuniary compensation to owners of animals slaughtered"—"cases in which compensation is to be paid"—"the measure of compensation, which may be the whole, four-fifths, two-thirds, one-half, one-third, of the sound value of the beast destroyed"—"the fund on which compensation is charged, which may be local or general, and may be raised from the stockowners as a class, or from the public." All this is very material, and it would be exceedingly useful to have a digest of such information at once prepared upon authority.

A FARMER'S NOTIONS ON THE LABOURER'S EDUCATION.—Why has not every farmer his own thatcher? There is nothing so difficult in the art but that it may be easily learnt but 'tis not every one who likes to find reed and spars with which a novice might practise, and they depend on the district thatcher. Again, how useful on a farm is a man who has a knowledge of rough carpentry, and how many pounds a-year might he save his master! But you may say, "It is very well to talk of the utility of such men, but how are we to get them?" Why you must begin with the young children; you must educate them. But you may say, What have reading, writing, and arithmetic to do with thatching, carpentry, hoeing, drilling, ploughing, and the host of other things on the farm? True, they have very little to do with them, but every boy should learn them, and whilst he is obtaining a knowledge of these he should likewise study the various agricultural labours as well. Your village schools are not yet what they should be; but we are going on, on, on, towards what I suppose we shall have them in time, and that is, industrial schools. A philanthropic lady of Bridport, whose name will live for ages, though she now sleeps with the departed, some years since established an industrial school for girls in this town. Now, these girls are taught all the work of the house—cooking, cleaning, washing, ironing, baking, and a host of et-ceteras, besides a good English education. At fifteen or sixteen they are fitted for a situation as house servants, and many people have already obtained from that establishment what is now rare to be had—a good domestic servant. Now, we want similar institutions in country villages, for children of both sexes; and I am happy to say that there are many in England already, viz., at Henley-on-Thames, at Northampton, Gloucestershire, in Herefordshire, Warwickshire, and Worcestershire. I cannot find time to tell you exactly how these schools are worked, but I would refer you to vol. vi. of the *Bath and West of England Society's Journal*, where, in a paper written by "Spender and Isaac," the schools are fully described. It is all very well, gentlemen, to teach children to be moral, virtuous, and good Christians, but you must teach them something more—how to be good and expert workmen, and how best to do their duty in the sphere of life in which they may hereafter be placed.—*Mr. Cox, at the Bridport Farmers' Club.*

ANNUAL SALE OF THE MIDDLE-PARK YEARLINGS,

AT MR. BLENKIRON'S, AT ELTHAM, ON SATURDAY, JUNE 2.

	gs.
Bay colt, by Amsterdam—Glance (dam of Narcissus, by Venison (Mr. Fobert)	50
Bay colt, by Amsterdam—Madame Landeau, by The Libel (Mr. Pryor)	160
Chesnut colt, by Amsterdam—Banshee, by The Ugly Buck (Mr. J. B. Morris)	220
Brown colt, by Horror—Panpipe, by Bay Middleton (Mr. Elliot)	65
Brown colt, by Voltigeur—Chalybeate, by Leamington (Mr. Maund)	160
Roan filly, by Lambton—First Fly, by Birdcatcher (Mr. J. B. Morris)	230
Bay filly, by Wild Dayrell—Pandora (dam of Hope), by Cotherstone (Mr. W. G. Bennett)	105
Chesnut filly (sister to Shrapnell), by Weatherbit—Shot (dam of Marksman), by Birdcatcher (Mr. Chaplin) ...	170
Bay filly, by Weatherbit—Fanfaronade (dam of Gasconade), by Gameboy (Mr. Pryor)	430
Chesnut colt, by Colsterdale—Birdtrap (dam of Birdfinder), by Birdcatcher (Mr. J. B. Morris)	250
Chesnut colt, by Kettledrum—Goldfinch, by West Australian (Mr. Cartwright)	360
Black colt, by Chanticleer—Whimsical (dam of Fantastic), by Launcelot (Captain Cooper)	470
Bay colt, by Wild Dayrell—Restless, by Burgundy (Mr. Angerstein)	50
Chesnut colt, by Marsyas—Q.E.D., by Kingston (Prince Soltykoff)	125
Bay colt, by King Tom—Lady Vernon, by Poynton (Mr. H. Goater)	380
Bay filly, by Weatherbit—Governess, by Chatham (Mr. Ten Broeck)	350
Bay filly, by Dundee—Calcavella (dam of Moneyspinner), by Birdcatcher (Mr. Norton)	190
Bay filly, by Dundee—Defenceless (dam of Caractacus), by Defence (Mr. Jacques)	420
Chesnut filly, by Newminster—Sacrifice (dam of Jeannie Deans), by Voltaire (Mr. Chaplin)	400
Chesnut filly, by Dundee—Magic (dam of Magician), by Melbourne (Mr. Maund)	400
Bay colt, by Wild Dayrell—Furbelow (dam of Queen Mary), by Cotherstone (Mr. Ten Broeck)	520
Brown colt (brother to Neptunus), by Weatherbit—Athena Pallas, by Birdcatcher (Count Batthyany) ...	610
Bay colt, by Amsterdam—Mrs. Fowler (dam of Sabrina), by Heron (Mr. Chaplin)	300
Chesnut colt, by St. Albans—Elspeth (dam of Drumour), by Birdcatcher (Mr. Chaplin)	2000
Bay colt, by Newminster—Queen's Head, by Bay Middleton (Duke of Hamilton)	700
Chesnut colt, by Dundee—Dinah (dam of Commotion), by Clarion (Duke of Hamilton)	650
Black colt, by Dundee—Ennui (dam of Saunterer), by Bay Middleton (Mr. W. Robinson)	700
Bay colt, by Marsyas—Duchess of Kingston, by Kingston (Count Batthyany)	610
Bay colt, by Dundee—Curse Royal, by Mildew (Mr. Cartwright)	300
Bay colt, by Newminster—Lady Elcho (dam of Elcho), by Sleight of Hand (Duke of Hamilton)	2,500
Bay filly, by Newminster—Madame Stodare (dam of Wildrake), by Sleight of Hand (Mr. Pryor) ...	410
Chestnut filly, by Newminster—mare by Hampton (dam of Gaspard) (Duke of Hamilton)	500
Brown colt, by Weatherbit—Triangle (dam of Problem), by Epirus (Mr. Chaplin)	900
Chestnut colt, by Marsyas or Dundee—Beatrice, by Birdcatcher (Duke of Hamilton)	550
Chestnut colt, by Marsyas—Perfection, by Birdcatcher (Mr. R. Herbert)	260
Chestnut colt, by Marsyas—Leprosy, by Mildew (Mr. Jacques)	280
Bay colt, by Weatherbit—Maid of Palmyra (dam of Verdant, by Pyrrhus the First (Mr. Jacques) ...	310
Chestnut colt, by Weatherbit—Butterfly (dam of Eltham), by Knight of the Whistle (Marquis of Hastings)	900
Bay filly, by Weatherbit—Frolic, by Touchstone (Mr. Fobert)	310
Bay filly, by Horror—Eltham Beauty, by Kingston (Colonel de Butze)	115
Brown colt, by The Prime Minister—Actress (dam of Who's Who), by Annandale (Captain Cooper) ...	300
Bay colt, by Oulston—Medeia, by Pyrrhus the First (Duke of Hamilton)	420

FOREIGN AGRICULTURAL GOSSIP.

We have to note two decorations in the Legion of Honour in favour of French agriculturists. Thus M. Bouthier de Latour, Director of the Farm School of Montceau, in the Saône-et-Loire, and M. Carette, agriculturist, in the departement of the Aisne, and Vice-President of the Laon Agricultural Committee, have been named Chevaliers of the Legion of Honour. M. Bouthier de Latour was a competitor for the prize of honour of the departement of the Saône-et-Loire, in connection with the Maçon District State Agricultural Exhibition. He had a great chance of becoming a laureate; "but at the last moment," to quote the words of M. Tochon, reporter of the jury, "he withdrew from the competition, moved by considerations which reflected honour upon him. He left, in fact, to his competitors, who were all his pupils, his imitators, and his friends, another chance of obtaining the prize of honour for which a life entirely devoted to agriculture gave him a right to hope. M. Carette is a veteran in connection with French agriculture and the production of beet-root sugar. —The second series of French district state agricultural shows has come and gone. The prizes of honour were obtained as follows: In the Bas-Rhin, by MM. Schattenmann, of Bouxwiller; in the Lozère, by the Comte de Morangiès, of Falaiges; in the Charente-Inférieure, by M. Bouscasse, Director of the Farm School of Puilboreau; in the Manche, by the Vicomte la Gouldrede la Bretonnière, for the farm of Quesnay-en-Golleville, near Valognes; in the Indre, by MM. Masgelier and Foucret, for their working of Treuillant, near Châteauroux; and, finally, in the Aisne, by M. Georges, of Hargival, in the commune of Vend-huile. Several of these gentlemen had previously attained a certain reputation in the French agricultural world.—The Agricultural Society of the Puy-de-Dôme holds every year a competition in one of the arrondissements of the departement. This year the "solemnity" will take place in the arrondissement of Clermont, at Billom; and it will last from Friday, Aug. 31, to Sunday, Sept. 2. Prizes of honour for agriculture and horticulture, as well as encouragements for agricultural and horticultural improvements, will be distributed exclusively among competitors from the arrondissement of Clermont. Other prizes, intended for agriculturists of the whole departement, and amounting to £240, as well as gold, silver, and bronze medals, will be accorded to exhibitors of reproductive animals of the bovine, ovine, and porcine species, poultry, and agricultural and horticultural implements and products.—The death is announced of M. Jacques Chamard, a veteran agriculturist in the valley of Germigny, in the Cher, who has just died in the departement of the Allier, at the house of one of his friends, at the age of eighty-three years. Few agricultural careers have been distinguished by such great works and such great results as that of M. Chamard. Arriving, about 1818, in the marshy and wooded valley which extends from St. Amand-Mont-Rond beyond the Guerche, M. Chamard occupied himself for thirty years with the task of transforming into meadows the pools and woods which covered almost the entire surface of the great farms which he had taken on lease in this almost uninhabited valley, where cultivation had hitherto been regarded as expensive and unprofitable. The success which he obtained was such that land for which a rent of 12s. or 14s. 6d. per hectare (two acres) had been hitherto paid soon reached a rent of £3 12s. or £4 per hectare (£1 16s. to £2 per acre). The district, which had not hitherto fattened a single horned beast, was changed into meadows in which more than 4,000 head of cattle may now be seen feeding. At the same time that M. Chamard thus developed, on a gigantic scale, his system of grazing by herbage, he devoted himself extensively to the production and improvement of the Charolaise breed, which he had introduced into the Cher, as well as to the cultivation of trefoil; and the reputation of his herds, due to the excellence of his stock, made itself felt throughout the Nivernais and Charolaise districts.—We ought also to mention the death of M. Flocon, Minister of Agriculture in the French Provisional Government of 1848.—As regards French agricultural literature, the appearance may be noticed of a treatise by M. Isidore Pierre, on the malady which attacks sheep and cattle, and which is known among the French as *sang de rate*. This disease commits great ravages in the important agricultural district termed the Beauce. It is affirmed that it carries off every year more than 10 per cent. of the sheep in part of the Beauce, while cattle also pay it a considerable tribute. In some years, and in certain localities where the soil is dry and calcareous, the mortality sometimes amounts to a fourth, or even a third of the effective strength of a flock. The late M. Delafond, according to information collected on the spot, estimated at more than £280,000 for the year 1842 alone the loss in money experienced in the Beauce by ravages committed in its herds by *sang de rate*. What is still more distressing, is that the disease ordinarily attacks the finest animals first—those inspiring, in fact, the finest hopes; it strikes them in the vigour of their age, and it is only later that it afflicts aged beasts of less value.—M. Joseph Millet has issued a treatise entitled *Le Petit Cultivateur au Dixneuvième Siècle*. This manual of agriculture, as its title indicates, is not addressed to cultivators working large estates, although the latter may yet find useful information in its pages. Its object is more modest; but that object it attains. All that a small cultivator ought to know is taught him in this work, with an order and a clearness which unfortunately are not always met with in elementary works on agriculture. M. Millet knows the description of minds which he addresses, and he has the art to adapt his lessons to them. Numerous tables, which complete the work, are not the least useful part of it. The cultivator may immediately find in these all that it is important to him to know as to the nature of lands, the cost of transport, manures, &c. The figures given are borrowed from the most authoritative and recent works. In a word, M. Millet has neglected nothing to make his small treastise a safe and convenient guide.—Dr. Adrian Sicard has issued a bulky pamphlet entitled, *A Guide Pratique de la Culture du Coton*. Nothing could come more *à propos*, under present circumstances, than a practical guide for the cultivation of cotton, for the culture of that plant is still a novelty in France; and even in many localities where it might be carried on with success it has not yet been introduced. M. Sicard, who is Secretary-General of the Marseilles Horticultural Society and Committee of Practical Agriculture, has occupied himself in his work with two aspects of the question. On the one hand, he gives precepts to direct the culture of cotton; on the other hand, he endeavours to show with what facilities and what advantages this cultivation might be introduced into certain parts of the south of France, and how desirable it is that it should be developed in Algeria, where it already flourishes. It is only after numerous experiments that M. Sicard has decided on publishing his book. All questions connected with the cultivation of cotton are treated with much clearness, and are carefully developed.—M. Goux has published a work of 98 pages, on the Garonne breed of cattle (*La Race Bovine Garonnaise*). This work has not, however, now seen the light of day for the first time. In 1854 it was presented to the Central Society of Agriculture, which honoured it with a gold medal, and caused it to be inserted the same year in its collection of *Mémoires*. Since 1854 the author has made some fresh observations, and has rehandled his work; it is thus a revised and augmented book which he has now issued. M. Goux, who is a veterinary surgeon in the departement of the Lot-et-Garonne, and secretary of the Agen Agricultural Committee, was more capable than any one to write the history of this interesting breed of cattle, of which M. de Gasparin speaks in favourable terms, that illustrious *agronome* observing, in his *Guide du Propriétaire des Biens Ruraux affermes*: "The shores of the Garonne are occupied by beasts which are the envy of foreigners, and which have often been imported by the English, in order to improve their own breeds."—M. Gaucheron has published a volume of 210 pages, entitled *Cours d'Economie Agricole et de Culture Usuelle*. In 1863 a collection of the lessons of M. Gaucheron, who is professor of agricultural chemistry in connection with the Orleans Agricultural Committee, was edited by M. Cotelle, and was honoured with a gold medal by the Minister of Agriculture. The work now under notice is a continuation of those lessons. The work is composed of two parts—the first comprises "notions" on agricultural economy, a science still unknown by a great number of French cultivators, although it is indispensable to them; and the second contains excellent precepts on the cultivation of forage plants with seeds adapted for feeding and commercial purposes and industrial plants. M. Gaucheron observes at the outset: "It is regrettable that among us (that is, among the French) matters do not move on as in Germany, where those who wis devote themselves to agriculture commence by a study of r economy, while among us they only study cultivation prop so called." M. Gancheron has no difficulty in proving by amples how useful a sufficient knowledge of the principl rural economy would be to cultivators.—M. Hertel has is a *brochure* on the specialisation of agricultural product and M. Elie Carey has published a practical manual upon "education" of bees. These works, as well as some other cent French agricultural treatises, we are unable to no from the very good and sufficient reason of want of space.

FARM PROFITS.

SIR,—There is one important point upon which the majority of farmers and myself have never agreed, and probably never shall agree, and that is whether my farming pays a profit on the farm capital invested. Of course many landlords taking their cue from their tenants think as they do. I make no complaint of this. On the other hand, there is a comparatively small but most important agricultural minority who know and admit that my farming does pay—in fact, that it must pay, judging from the soundness of the theories upon which it is based. This minority is composed of practical men—intelligent, inquiring, honest, and calculating—who throw aside antiquated prejudices, and seek for and rely upon obvious and visible results; men who contest theories by comparative experiments on a sufficient but uninjurious scale, and thus verify or disprove them. I do not expect my statement of facts to be believed by the general mass: it would be unreasonable to do so; because I know that many, who would not impute falsehood to me, believe that I am deceived by my men or my bailiff, and that I am perfectly ignorant of the true state of the case. They do not, or will not, believe that for more than twenty-five years I have watched closely every operation in agriculture, with a view to compare various practices, and thus deduce a preferable and correct result. In fact, I may safely say that I have done so for 40 years, but most practically during the last 25 years; while I have done this, I have also endeavoured to discover and trace the *causes* of successful results; and here I must pay my tribute of respect, admiration and gratitude to those men of science who have, for the first time, illuminated the hitherto dark path of agricultural progress, and prevented that unprofitable stumbling which has cast away millions of agricultural capital in needless and fruitless experiments. But of what use is that bright light of science to those who will not avail themselves of it, but prefer the darkness of antiquated prejudices and local self-satisfaction? There is one very important reason why it is inconvenient to believe in agricultural amendment. Improvement in agriculture can only be carried out by an increased outlay of capital, or, failing that, by a considerable diminution in the extent of holding either as landlord or tenant. The pride of proprietorship rebels against this diminution of area, and the same feeling, aided by doubts as to the profit of increased investments, acts in degree upon the tenant. Besides, there is nothing, as a rule, more undefined and various than the most profitable amount of acreable capital required for profitable farming. Both landlords and tenants are quite "at sea" on this subject, and yet this is perhaps one of the most vital questions affecting profit. It is not at all uncommon for poor farms in poor neighbourhoods to be taken with a capital of £2 or less per acre, and I believe that the average capital of the United Kingdom is under £4 per acre. The result is a miserable gross produce of probably £3 12s. per acre. How can such tenants compete successfully with others investing from £9 to £15 per acre on the same description of soil, and getting a gross return of £10 to £12? The rent, tithes, rates, seed, horse-labour and manual-labour become increased on the small investment from 100 to 300 per cent. The result is a gradual wasting away of capital, the poverty of the tenants reacting on the landlord, and causing diminished rents; for we know that low rents and bad farming generally go hand in hand. I see so many instances where this over-holding and diminutive produce absorb the tenant's capital and send him to the world penniless, that it is quite afflicting. A bad season, like the present, upon a poor, unimproved and ill-farmed heavy clay farm, will mulct the tenant of 20s. to 40s. per acre. I know in one case near me, that in 1861 and 1862 the tenant lost £1,500 on 300 acres in years' holding, and quitted his farm a ruined man. I may some future paper trace the causes of loss to noblemen gentlemen who attempt to farm their own land and car make it pay. The production of maximum crops must be sheet anchor. These can only be produced by a sufficiency capital and practical knowledge. Recent statistics have sh that we have (in cattle, sheep, and pigs, reduced to she only about one sheep per acre—that is also the manure of sheep per acre—in the United Kingdom. Can we then won at the smallness of the crops, or the necessity for foreign ports of meat and bread? We have no statistics of poult but it is evidently equally as deficient as our meat supply—we import *daily* from abroad one million of eggs! The qu tity of corn we produce is evidently dependent on the quan of meat we make, for the farmer who increases his meat p duction will in the same ratio increase his supply of man —the one thing wanting to increase our, at present, sm crops of grain. Where water and manure are available, advantages of irrigation by hose and jet are too apparent admit of a doubt or question. On the 31st of Ma carted fifteen tons of fine Italian rye-grass hay, produce of five acres, producing a value of £14 to per acre from poor land. This very field produced a c of barley last year. After again irrigating, some portion the field which was mowed earlier for soiling has again thr up a crop nearly a yard high, and yet there are people to found who say this will not pay! The fact is, that much the odium of sewage irrigation has arisen from bungling chinery, ill arranged and miscalculated. For six long days 12 working hours our pumps have been putting on 120 gall per minute of water, mixed with manure, salt, and about th quarters of a ton of guano, at the following cost:—

Three tons of dust coal	£1	10	0
Cartage of ditto from Maldon..................	0	9	0
Engine-driver	0	15	0
Two men to hose and jet (7 days in 6) ...	1	10	0
	£4	4	0

A considerable amount of grinding, chaff-cutting, &c., done, and should go in diminution of the above charge against wear and tear of machinery. Quantity of land gated 9½ acres.

Expenses as above	£4	4	0
Three-quarters of a ton of Peruvian guano	10	0	0
Salt, 1 ton	1	4	0
	£15	8	0

So here is an expense of some 30s. per acre to prod least one ton more of hay, worth £4 to £5. The contr tween the portions not irrigated that could not be reac our jet, and those irrigated, should bring conviction most doubtful. Our young cabbages, where irrigated, s a line the advantage of irrigation. On a great scale Cornish engines, the cost of irrigation would be greatly nished. I am decidedly of opinion that the hose-and-j tribution is to be preferred where there is not natural g tion, or where water is scarce. It renders unnecessa very heavy expense of levelling or preparing land. No some agriculturists are aware that it has been proved the House of Commons Committee that 1,000 tons of s or water may be raised 300 feet at a cost of 13s. to 14s.

Tiptree, June 13.

J. J. MEC

THE NEW CATTLE RATE ASSESSMENT BILL.

The following are the leading clauses of this bill:—

ASSESSMENT AND LEVY OF GENERAL CATTLE PLAGUE RATE.

On it appearing from time to time to the Poor Law Board that money is required to be raised for defraying expenses incurred (before and after the passing of this Act) by local authorities in pursuance of the principal Act, including compensation payable in respect of animals slaughtered in pursuance of that Act, the Poor Law Board shall from time to time, by order under their seals, assess on the several Unions in England, in proportion to the net annual value (according to the valuation for the time being in force) of the property therein rateable to the relief of the poor (in this Act referred to as rateable property), such sum as to the Poor Law Board seems requisite for the purpose aforesaid, not exceeding in the whole in any year (reckoned from the first day of January) such amount as, in the judgment of the Poor Law Board, will be equivalent to a rate of threepence in the pound on the net annual value of the aggregate rateable property in all the unions, and not exceeding at any one time such amount as, in the judgment of the Poor Law Board, will be equivalent to a rate of one penny in the pound thereon.

Every such order shall specify the rate in the pound at which the sum thereby assessed is calculated (which sum so assessed is in this Act referred to as the General Cattle Plague Rate).

The Poor Law Board shall send printed copies of every such order under their seal to the respective guardians, and also to the respective treasurers of all the Unions.

On receipt of any such order the treasurer of each Union shall, out of the funds then in his hands to the credit of the Guardians, or if those funds are insufficient then out of the money next received by him on account of the Guardians, pay the amount assessed on the Union into the Bank of England to the credit of the cash account of Her Majesty's Paymaster-General.

In the accounts of each Union, each parish in the Union shall be debited with its proportion of the sum assessed on the Union, according to the net annual value of the rateable property in the parish.

ADMINISTRATION OF RATE.

Her Majesty's Paymaster-General shall keep in his book as separate account, to be called The General Cattle Plague Rate Account, and shall carry thereto all sums paid into the Bank of England to the credit of his cash account under this Act.

Her Majesty's Paymaster-General, under the direction of the Poor Law Board, shall from time to time pay to the several local authorities the amounts which the Poor Law Board, after the examination of the requisitions of the local authorities, think ought to be paid to them for defraying the expenses incurred by them respectively as aforesaid.

Where, before the passing of this Act, a local authority has paid out of the local rate, as defined by the principal Act, any compensation in respect of animals slaughtered in pursuance of that Act, then and in every such case the local authority shall be reimbursed, under the authority of the Poor Law Board, out of the money from time to time standing to the credit of the General Cattle Plague Rate Account, the amount so paid by the local authority; and the same, when repaid, shall be dealt with by the local authority as part of the local rate, as defined by the principal Act.

Animals slaughtered in pursuance of any of the orders made by the Lords of Her Majesty's Privy Council, and confirmed by section 32 of the principal Act, shall, for the purposes of this Act, be deemed to have been slaughtered in pursuance of the principal Act.

If, on the expiration of this Act, any balance remains on the credit of the General Cattle Plague Rate Account, the Poor Law Board shall, by order under their seal, assign the same to the several Unions in proportion to the net annual value (according to the valuation for the time being in force) of the rateable property therein; and Her Majesty's Paymaster-General shall, under the direction of the Poor Law Board, pay to the treasurer of each Union the amount so assigned to it, and on receipt thereof each parish in the Union shall be credited, in the accounts of the Union, with its proportion thereof, according to the net value of the rateable property in the parish.

DEDUCTION OF HALF OF RATE FROM OWNERS.

Where the occupier of rateable property is liable to pay a rent in respect thereof, he shall deduct from the rent in respect of each pound of the rateable annual value of the property (whether the rent is greater or less than the rateable annual value) a sum equal to one-half of the rate in the pound specified in the order or orders of the Poor Law Board made under section 4 of this Act, and so in proportion for any sum not less than a pound.

Where a person entitled to receive a rent in respect of rateable property is also liable to pay a rent in respect thereof, he shall deduct from the rent which he is liable to pay a sum bearing such a proportion to the amount deducted for the General Cattle Plague Rate from the rent which he is entitled to receive as the rent which he is liable to pay bears to the rent he is entitled to receive.

Every deduction directed by the foregoing provisions shall be made on the payment of rent next subsequent to each payment for the General Cattle Plague Rate.

LANDLORD AND TENANT (IRELAND) BILL.

A bill has been introduced by Sir Colman O'Loghlen and Mr. Gregory to arrange the relations between landlord and tenant in Ireland. The clauses are as follow:

AS TO CONSTRUCTIVE OR PAROLE TENANCIES IN RESPECT OF LAND LET FOR AGRICULTURAL PURPOSES.

Clause 1. In future a tenancy from year to year in respect of agricultural land can only be created by an agreement in writing. 2. In the absence of any written contract to the contrary, a tenancy, created after the passing of this act, of agricultural land shall be deemed to be a tenancy for twenty-one years. 3. Such construction of law, however, is not to apply to a tenant overholding after the expiration of his lease, unless he be left in such undisturbed possession of his farm for two years after such expiration. 4. For two years after the expiration of his lease an overholding tenant may be treated as a tenant at will, notwithstanding an implied creation of a new tenancy, but subject to certain restrictions. 5. In the case of a constructive tenancy for twenty-one years either party may during the tenancy compel a lease to be executed for the remainder of the unexpired term. 6. Such lease must contain the usual covenants, and none other, and any dispute respecting it shall be settled by the chairman of the county in which the lands are situated.

AS TO TENANCIES FROM YEAR TO YEAR OF LAND LET FOR AGRICULTURAL PURPOSES.

7. Twelve months' notice shall be necessary to determine a tenancy from year to year of agricultural land. 8. Tenants from year to year of agricultural land, whose tenancy shall be created after the passing of this Act, shall be entitled to deduct half the county cess. 9. In cases of tenancies from year to year of such land, the landlord shall not be entitled to distrain or to claim a year's rent, under 9 Anne, c. 8 (Ireland). 10. A tenant from year to year of agricultural land, if dispossessed, shall be entitled to compensation for growing crops and unexhausted manure. 11. The dispossessed tenant shall also be entitled to compensation for his tenant-right in certain cases,

when the custom of the country allows it, or he has been in possession five years. 12. Such compensation can be recovered by civil bill, and held as charge on the farm from which the tenant shall be dispossessed.

AS TO WHO MAY GRANT, AND AS TO THE EFFECT OF LEASES FOR TWENTY-ONE YEARS OF AGRICULTURAL LAND.

13. Every landlord may grant a lease for twenty-one years of agricultural land, except a landlord who is only a lessee. 14. Such lease shall be valid against the granter, and any future owner of the land, and all other persons interested in it, except in certain cases, the lease to be impeached as follows: 15. If the landlord should be evicted for defect of title, within two years after the making of such lease, the lease is to be considered voidable at the election of the new landlord. 16. A successor to a limited owner may object to such lease for not having had reserved the best rent; and in that case the chairman may increase the rent, and the tenant shall pay the increased rent, or the lease shall be void. 17. The Landed Estates Court may set aside or amend such lease in certain cases. 18. Leases for twenty-one years are not to be subject to stamp duty.

AS TO TENANCIES UNDER LEASES FOR TWENTY-ONE YEARS OF AGRICULTURAL LAND.

19. A lessee for twenty-one years cannot subdivide or sublet without consent in writing. 20. If a lessee does subdivide or sublet, he shall be liable to a penalty of £2 an acre for each acre he parts possession of. 21. The lessee subletting without consent is rendered incapable of recovering rent from the sub-tenant, and the sub-tenant or other person may recover back from the tenant any money paid in advance as consideration for any subdivision or subletting. 22. The letting of conacre, or grazing, or meadowing, is not to be deemed subletting or subdivision. 23. In case of an eviction for non-payment of rent of a lease for twenty-one years, the tenant is to have only three months to redeem. 24. The landlord is not to be liable to account for the profits of land during the period allowed for redemption. A twenty-one years' lease shall not operate as an outstanding legal estate.

AS TO RENT AND RECOVERY OF RENT OF AGRICULTURAL LAND.

26. After six years, all arrears of rent are to be barred. 27. Grazing stock is not to be liable to landlord's distress beyond the amount of the grazing money, unless in case of fraud. 28. Household furniture is not to be seized for agricultural rent, and implements of husbandry, imported manure, and materials for building or draining are to be also exempt from distress for rent.

GENERAL PROVISIONS.

29. This Act not to apply to demesne land or land in boroughs, or holdings under £4 annual value. 30. Chairmen of counties are to make rules and frame forms.

THE ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The annual meeting was held on Wednesday, June 6, at the London Tavern, to receive the annual report of the council for the year ended on the 31st December, 1865, and for the election of officers and pensioners. Mr. **RICHARD GARRETT** in the chair.

Mr. **SHAW**, the Secretary, read the following report, which was unanimously adopted: "In presenting the annual report of the Royal Agricultural Benevolent Institution for the year ending the 31st December, 1865, the Council congratulate the friends and supporters of the institution on the gradual increase of its funds, and on the extended advantages which that increase affords. During the past year fifteen pensioners have been placed on the books of the institution, and the Council have decided to elect two candidates in addition to the number admitted last year, making up the total number, since the first election, to eighty-nine. The financial progress of the institution is not less gratifying. The donations amounted to £961 6s. 11d., while the annual subscriptions reached £3,251 3s. 8d., being £307 0s. 2d. in excess of the previous year. In addition to the balance of £655 1s. 4d. from last audit, £370 5s. 0d. have been received from dividends, which, together with £19 3s. 4d., property tax returned, make the total receipts of the year £5,083 4s. 6d.; of which £1,134 have been paid to pensioners, and £2,710 12s. 6d. have been added to the invested capital of the Institution, leaving a credit balance at the banker's of £628 3s. 1d. While these figures testify to the spreading recognition of the importance of the Institution, it must not for a moment be imagined that it can afford to dispense with the assistance of any of its generous supporters. The annual claim upon its bounty can only be met by annual subscriptions. For it must be borne in mind that were the revenue of the Institution four-fold its average amount, the council would be at no loss to find qualified candidates to absorb it. Regular annual subscriptions, therefore, are earnestly solicited—subscriptions not terminated, as has too often been the case, on the success or failure of a favourite candidate, but annually continued for the general benefit of the Institution. The council cannot too highly appreciate the services of the Honorary Local Secretaries, on whose exertions so large an amount of the prosperity of the Institution depends. (Signed) "SPENCER."

Messrs. T. Batson, C. S. Cantrell, J. Collins, H. Corbet, J. Druce, J. Howard, and T. Scott, the retiring members of the council, were re-elected.

The thanks of the meeting were voted to Lord Spencer, chairman of the executive council, to Lord Cowper for his kindness in presiding at the anniversary festival of the Institution, and to Mr. Shaw, the Secretary, and the council proceeded to the election of pensioners, Mr. Alderman Mechi in the chair. The following were found to be the successful candidates:

MALE PENSIONERS AT £26 PER ANNUM EACH.

	Votes.		Votes.
Matthias Baker	493	Edward Whiteaway ...	309
Richard Fletcher ...	331	Caleb Cooke Weeks ...	257

MARRIED PENSIONERS AT £40 PER ANNUM EACH COUPLE.

R. and H. Dester ...	915	J. and M. Oliver ...	611

FEMALE PENSIONERS AT £20 PER ANNUM EACH.

Mary Anne Gotelee ...	585	Amy Louisa Fifield ...	505
Mary Clarke	533	Susanna Leonard ...	543
Charlotte Smith	584	Ann Salmon	473

THE THORNE AGRICULTURAL AND POULTRY SHOW.—Wednesday, June 20, witnessed the fourteenth annual show of agricultural implements, stock, and produce, in connexion with the Thorne association; and although, from obvious circumstances, very great things were not expected, few anniversaries have proved more successful. As usual, the exhibition was held in the beautiful and most convenient grounds belonging to Mr. Making Durham, and opposite the hall. The show was opened about the usual time, and up to two o'clock went on steadily filling, but the greatest influx of visitors was between three and four, when the grounds became thronged. The implements were not so numerous, nor quite so interesting as usual, but yet they formed a very good collection. Of horses there never was a better show. Mr. R. Milward's British Queen, highly commended at Islington, took the cup for the best roadster, beating nineteen others, and his Dunstan was the best pony of sixteen entered. There were some very promising foals to be found, more particularly amongst the heavy breeds. In dogs there was close competition in many of the classes, and sheep-dogs, as a class, were good, as also the pointers, but the setters were only moderate. Poultry was a very large and important class. The exhibitors included many of our more celebrated breeders from a distance. Rabbits and pigeons were, as for many years they have been, most numerous classes. Some very large and rich eggs were exhibited, whilst the flowers were surpassingly beautiful in appearance.

CALENDAR OF AGRICULTURE.

KITCHEN GARDEN.

Transplant broccoli at different periods, for early and later spring supply, choosing, if possible, a moist state of soil; otherwise, if the weather be dry, every hole must be filled with water. The ground ought to be rich in nitrogenous manure, and therefore some soot mixed with spit dung would be useful, as it contains salts of ammonia. May-sown cauliflower may be treated in the same manner.

Endive is to be sown twice in the month. Sow early the last crop of scarlet-runners and French beans; a row or two of cos and Silesian lettuce, radish, white and red turnip varieties, a sprinkling of carrots, onions, and salading as required. Celery is to be carefully earthed; and in doing this for the first and second times, hold each plant compactly with one hand, while the other applies the fine earth close around the lower part of the leaves, but not so high as the growing heart. Give water copiously along the trenches, if the weather be dry; for the first good start is most important. Sow a full crop of turnips, the early Dutch, white; and yellow, to come in late in the year and through winter.

After the second week sow cabbage-seed for coleworts, called "greens," one of the sweetest of spring vegetables.

Leeks: Transplant, dig, and manure richly a plot or two, and try with the dung 2 oz. of sulphate of ammonia to the small barrow. Very pure guano in the extent of a pint to the same bulk would confer phosphate of ammonia, and of lime several ammoniacal and nitrogenous compounds, common salt and neutral sulphate, to the soil. It is the comprehensiveness of pure guano which stamps its value, and therefore should always be added to the more exhausted manure as a restorative. In planting leeks, make deep case-like holes, and drop them in, supplying water in a small stream so as to fix the roots of each.

Transplant vegetable-marrow and cucumber plants already raised in heat. Dig a hole for each in a warm open spot of ground, put in a barrow or more of leafy rich manure, and cover it with some light rich soil. Plant, water, and cover with hand-glasses till growth be established, and then gradually train out the runners: stop the points occasionally, to obtain laterals.

FRUIT DEPARTMENT.

Remove at the end of the month all wild, ill-placed, and superfluous wood from cherry-trees and plums. Apple and pear-trees are untouched till next month.

FLOWER GARDEN.

Take up bulbs, dry them, and pipe and layer pinks and carnations. Propagate geraniums by cuttings in sand and leaf-mould, plunging the pots into a gentle hot-bed: they soon root, and may be transferred to larger pots of richer soil, loamy sand, and decayed cattle-dung. Guano is reckoned a highly valuable stimulant; but flowering plants are to be gently treated with stimulants, and more carefully with spurious guanos. The safer application will be in mixtures.

CALENDAR OF GARDENING.

The sowing of turnips is now finished, except in the eastern counties, where the later sown are more exempt from the fly and mildew. Drilled crops are continually scuffled and hoed, and all stale weeds pulled by hand. The preparation of clay fallows must also proceed, the dung got ready, and the lime brought forward.

Draining of wet lands will be advantageously performed during this month. The turnip sowing being finished, the teams may be employed in bringing forward stones and tiles, and the filling of the drains may go on rapidly, the digging having been previously performed, except the clearing of the bottoms of the drains, which should be done on their being immediately filled.

Hay harvest will be mostly finished this month. Carry all dried herbage as quickly as possible; stack and thatch it without delay. Have in readiness an abundance of thatch, and use during the carrying season tarpaulin cloths of the rick, to screen from rain. A light cloth is useful, suspended from the ends of the ricks by pulleys.

Continue folding the store sheep, both on arable and grass lands; it is a cheap and effectual improvement.

Vetches and clovers will now be abundant; cut and carry the herbage in a fresh state daily, for horses and cattle in the yards: give the milch cows a foddering every night in the shed and yard. Provide ample littering for the yards and sheds: the quantity of dung made will pay all expense most amply.

The sheep flocks will require protection, protect by dressing against maggot-fly; provide in the pasture-fields small cots for shelter against heats and rains. Put mares to the stallion regularly. See that the cattle have water in the pasture-fields; repair fences, allow no gaps, and have gates and wickets in the most thorough order of use.

In early seasons and climates the harvest of grains and pulse crops will commence in the end of this month with rye, peas, and barley. The barns and rick-stands must be in repair to receive the crops, which may be quickly carried in the early season.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JUNE.

The weather having been remarkably fine and vegetative, the wheat crop has made considerable progress towards maturity in all parts of the United Kingdom. It would seem premature, even at this advanced period, to offer any positive opinion as regards the forthcoming yield. Present appearances, however, are in favour of a fair average growth.

Owing to the commencement of the war in Germany, and the possibility of the exports of all kinds of produce from Austria and Prussia being prohibited, the wheat trade has shown great firmness, and prices have advanced from 4s. to 7s. per qr. All kinds of spring corn have, as a consequence, risen in value from 1s. to 2s. per qr., and the top price of flour has been advanced to 50s. per 280lbs. Even at these advanced rates, holders have been indifferent sellers, forgetting, perhaps, that we are still in a position to import large quantities of grain from France and Russia.

The quantity of wheat now in stack in this country is supposed to be a fair average. Nevertheless, our farmers have thrashed out sparingly, under the impression that prices have not yet seen their highest point for the year. Of spring corn, the supplies are almost wholly exhausted; consequently, we shall commence the consumption of the new crops quite as early as usual.

Throughout the Continent, wheat has risen somewhat rapidly in price, owing to the large orders transmitted from this country. Barley and most other articles have changed hands freely, on higher terms. American advices bring very little change in the value of either wheat or flour. The shipments to all quarters have been on a very limited scale. The quantity of wheat held in the Western States is represented as nearly equal to last year.

The cutting of hay has been commenced in the whole of our forward districts. As yet, the quantity secured is comparatively small; but the crop, as a whole, promises well. In the metropolitan markets meadow hay has sold at from £4 to £5 10s., clover £5 to £6 10s., and straw £1 18s. to £2 4s. per load; new meadow hay has realized £4 to £4 4s. Very little old hay is now in the hands of the growers.

Although the hop bine has progressed rapidly, there has been an improved demand for most kinds of hops, on higher terms. The stock on hand is much reduced; but our impression is that the new growth will be nearly equal to last season.

Potatoes are looking well, and a heavy crop is generally expected. Last year's produce must have been enormous, when it is considered that, even now, large quantities of old potatoes are on sale, at from 80s. to 140s. per ton. The quantity of land under potato-culture this season is very extensive.

The public sales of colonial wool have been brought to a close. Throughout, the biddings, owing to the immense supply on offer, and the unusually high rates charged for accommodation, were languid, at a decline in the quotations of 1d. to 3d. per lb. when compared with the previous series. Had it not been for the heavy purchases for shipment to France—about 75,000 bales—a much heavier fall must have taken place in prices. The sale for English wool has been extremely heavy, at drooping currencies. The next public sales will be commenced on the 12th of August. The quantity of wool already arrived for them is over 60,000 bales.

In several parts of England the turnip crop has been a complete failure. Swedes and mangolds, however, are looking well. The fine rains have improved their growth considerably.

In Ireland the wheat and other crops are looking well. The trade for wheat has been moderately active, at 3s. to 4s. per qr. more money. Spring corn has advanced in price; whilst flour has been disposed of at enhanced rates. The shipments of produce to England have been on the increase.

The Scotch markets have been very firm for wheat, on higher terms. Barley and other articles have changed hands freely, and the quotations have had an upward tendency. Very few complaints have reached us respecting the appearance of the crops.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The Metropolitan, as well as most of the other leading markets have been fairly supplied with beasts in improved condition. For the most part, sales have progressed slowly; nevertheless, prices have ruled high. At one period the best Scots and Crosses were disposed of as high as 6s. per 8lbs., against 5s. per 8lbs. at the corresponding period in 1865. This high figure, however, has not been maintained, the closing quotations being 5s. 8d.

The arrivals of sheep have been seasonably extensive, and quite equal to the demand. The mutton trade has therefore been inactive, on rather lower terms. The best old Downs and half-breds have sold at 5s. 10d. to 6s. per 8lbs.

There has been a good demand for lambs, at full quotations —viz., from 6s. 8d. to 8s. per 8lbs.

The supply of calves having increased, the veal trade has been in a sluggish state, on rather easier terms.

Prime small pigs have commanded full quotations. Otherwise the pork trade has ruled heavy.

The total supplies of stock exhibited in the Metropolitan Market have been as follows:—

	Head.
Beasts	18,820
Sheep and Lambs	139,880
Calves	1,864
Pigs	1,782

COMPARISON OF SUPPLIES.

June.		Beasts.	Cows.	Sheep and Lambs.	Calves.	Pigs.
1864	...	25,890	550	138,450	2,786	3,250
1865	...	24,050	646	165,720	4,278	3,210

The imports of foreign stock have been on a fair average scale, as will be seen from the annexed return:

Beasts	8,965	head.
Sheep	33,709	
Lambs	1,105	
Calves	1,782	
Pigs	1,864	
Total	47,425	
Same time in 1865	61,935	
„ 1864	38,029	
„ 1863	30,059	
„ 1862	22,841	
„ 1861	32,751	

No stock arrived direct from Holland during the mont and it is fully expected the exports of cattle, sheep, &c., bo from Austria and Prussia, will shortly be prohibited. In th case—unless, indeed, imports are permitted from Holland— we shall have a further serious rise in the quotations.

The comparison of the arrivals of English, Scotch, and Iri breeds is as follows:

	June. 1864.	June. 1865.	Ju 186
From Norfolk, Suffolk, &c.	10,800	8,400	9,0
Lincolnshire	600	2,000	—
Other parts of England	2,600	2,250	1,9
Scotland	2,905	2,215	5
Ireland	480	970	2

COMPARISON OF PRICES.

	June, 1863. s. d.		s. d.	June, 1864. s. d.		s. d.
Beef from	3 4	to	5 2	3 4	to	5 0
Mutton	3 8	to	5 2	3 6	to	5 2
Lamb	5 4	to	6 8	6 0	to	7 0
Veal	4 0	to	5 0	4 0	to	5 0
Pork	3 6	to	4 6	3 6	to	4 0

	June, 1865.				June, 1866.			
	s.	d.	s.	d.	s.	d.	s.	d.
Beef from	3	6 to	5	2	3	10 to	6	0
Mutton	4	4 to	6	4	4	0 to	6	0
Lamb	6	0 to	7	8	6	8 to	8	0
Veal	4	0 to	5	4	5	4 to	6	4
Pork	3	6 to	4	10	4	0 to	5	2

Newgate and Leadenhall have been but moderately supplied with meat, which has sold slowly, at fluctuating prices.

WEALD OF KENT.

During the last fortnight we have had some beautiful refreshing showers, and the withering frosts of May, which so much retarded the growing crops, have passed away. The present month being summer-like, vegetation has made rapid progress. Wheat is now fast coming into ear; many pieces are slight, and, under the most favourable circumstances, an average crop cannot be calculated on. Oats, generally, look much better than we anticipated; the indifferent quality of the seed sown in the spring, coupled with the untoward season, has an appearance of gloom for the future; still the plant is healthy and strong, but short in the straw. Barley, upon some of our stiff soils, is not presenting a good appearance; warm weather with occasional showers will, however, do much to improve it. The beans and peas are doing remarkably well; they are very strong and full of bloom; should nothing befall them a full average will doubtless be realized. Mowing of seeds is pretty general: the crop is not heavy. Grass during the month of May wasted rather than otherwise; but the warm showers fell copiously, imparting fresh vigour, so that when the time for mowing arrives hopes are entertained of better yield. The hop-bine has grown very fast during the past week, and in most grounds has gone over the tops of the poles. Fly and lice infest the leaf in great abundance, and considerable anxiety is manifesting itself about its effects on the ensuing growth. Many fear a total blight, and the most sanguine only build up their hopes of a fair growth on the fact that it is yet early.—June 22.

SOMERSETSHIRE.

There is room for more frequent notices of our growing crops at this season. Up to this time we have, for the first half of 1866, had less wet than for many years, and had there not been almost weekly a very fine fall of rain, genial in its effects, we should have felt more injurious consequences in nearly all the growing crops: as it is, without question they are late, and harvest cannot be an early one. Wheat, with few exceptions, has been unfavourably reported: weak in colour, thin on ground, and short in the straw, it has improved from time to time with the fine rains, but unless there is an extra fine kern it can hardly be an average crop. Barley is very promising, and so are beans, particularly winter ones, a large crop. Oats were not so well spoken of. The few peas grown are goodly ones. Clover and ryegrass are thin, and what has been cut light in weight. It has up to yesterday been very cold for the season; before the fine rain on Monday morning, of four hours' duration, it was very cold, with high winds. It has threatened without coming to much. Some hay has been secured; next week mowing on the meadows will become general, and dry weather acceptable. Of the root crops mangel plants are looking well, a great deal planted. Some swedes have been sown and up; for these it is rather early. There will be a large crop of apples; excepting grapes, other fruits will be rather scarce. Potatoes are looking very well; new ones are as yet light, and the old stock all but exhausted. We have had fine rains for the flax crop; rather less sown than usual. Lands have been thrown down to grass, and more beans planted, in consequence of the low prices which have been realized in proportion to sheep and beans. The first crop of hay will be light; but there will be a greater quantity of acres mown than usual, there is always such a good market for it to send off by rail. There have been large supplies of sheep and pigs at our markets, Bridgewater, the largest fair held in this county, was larger this year than any before. Fat sheep have come more freely, but the prices are rather lower. Fat lamb supplies were equal to the demand; mutton 8d. to 8½d., lamb 8½d. to 9d. per lb. to sink the offal. As to poor sheep the prices have recently gone back, but are still very high; 1s. 6d. is about the highest offer for wool, but there is very little done as yet, dealers being very backward in buying. Poor pigs are lower and in large supply. Some loss has been sustained in weaned calves from giving them too much cotton cake, a great many weaned. The make of cheese is said to be very fair this season, prices steady. The stock healthy. We know very little of what is going on in the poor stock and beef trade, as there is no market open except in Bristol. Beef is scarce; of stall-fed very few remaining, and the grass-fed hardly fit; prices have kept up, and we cannot get best joints of beef under 8d. or 9d. per lb. Graziers have given dealers commissions to purchase poor stock: by this means the cattle are sent with one pass direct to the grazier. I am disposed to think there will not be an average so fatted this year. Mowing-machines are getting into general use, and it is likely the reaping-machines will be more used this season. We have heard of no blight amongst the potatoes: a good many grown this year.—June 22.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ABINGDON FAIR.—There were two or three very useful droves of Welsh horses, a good many out of which changed hands, and anything likely to turn into a handy nag fetched from £16 to £30, being the highest price we heard asked. Owing to Ilsley coming on the same day, the supply of sheep and lambs was short, as at the latter place the trade was a better one to the extent of about 2s. per head.

BANBURY FORTNIGHTLY SHEEP FAIR.—The supply was about an average, and trade was tolerably brisk, many of the pens being cleared early. Prices ran from 5s. to 6s. the 8lbs., and in some cases a trifle over.

BOROUGHBRIDGE FAIR.—The gathering of buyers and the show of horses exceeded that of many previous years. Only a few first-rate hunters of the class were sought after in these days of heavy-weight-carrying horses, with good breeding and easy going. Several were sold at prices ranging from 80 gs. to 100 gs. each. The state of Continental affairs, and the recent bank failures, prevented some old buyers from speculating as usual. Several large lots were bought up for the army by English and foreign dealers. There was an average show of hacks, cobs, cart and draught horses, the whole of which maintained high prices. Of course there was the average muster of broken-down, worn-out animals. Irish horses were also shown of a medium quality. To give a fair criterion of prices would almost be impossible. Cobs, hacks, and troop horses, £15 to £40; inferior animals, £7 to £14 each. The supply of sheep was very good. The fair altogether was quite of a satisfactory character.

BOSTON SHEEP MARKET.—An average supply of fat sheep, with a brisk trade, at an advance of ½d. per lb. on last week's rates.

BURGH FAT STOCK MARKET.—The show of sheep for sale was remarkably good both for number and quality, and there being a strong muster of buyers, many of whom were from distant towns, business proceeded rapidly, and a good clearance was effected. Mutton made from 8d. to 8½d. per lb.; in some cases the higher figure of 9d. was said to be reached.

CARR BRIDGE MARKET.—The stock consisted wholly of stots and queys, and the following prices were realized by the sellers: Mr. Cumming, Benanach, sold his stots and queys at £7 10s.; Mr. Oswald, Dalnahatnich, at £6 10s.; Mr. M'Bean, Auchterblair, at £6 5s.; Mr. Menzies, Carr Bridge, at £5 17s. 6d.; Mr. Grant, Tullochgorm, at £7 13s.; Mr. Grant, Forgin, at £5 10s.; Mr. Cameron, Carr, at £5 10s.

CAWDOR FAIR.—The attendance of dealers was good, and nearly all the lots of cattle, in anything like good condition, were sold at fair prices. The leaner kinds of stock met with a stiff sale. The following are a few of the sales:—Capt. Sharpe, Newton of Cawdor, a farrow cow for £19, two cross stirks for £21 10s., a quey, two year old, for £16; Mr. D. Falconer, Woodside, sold a year-old quey for £9 10s.; Mr. M'Bean, Connage, sold a lot of cross stirks at £12; Mr. Stewart, Bog of Cawdor, sold a lot of two-year-old cross stots at £12, and bought a lot of Highland stirks at £5 10s.; Mr.

Campbell, Ardersier, sold a lot of polled stirks at £5 7s. 6d.; Mr. John Smith, Galcantray, sold a lot of stirks at £7; Mr. M'Bean, Dalcharn, sold a lot of cross stirks at £7 7s.; Mr. Minto, Cawdor, sold a pair of stirks at £11; Mr. M'Intosh, Berrinan, sold a lot of stirks at £7 10s.; Mr. J. M'Pherson, Cawdor, sold a lot of stirks at £8 6s.; Mr. Clark, Campbeltown, sold a lot of two-year-old cross stots (top of market) at £23, and bought a lot of ditto at £12; Mr. J. Murdoch, Flemington, bought a lot of six Highland stots at £6 11s.; Mr. John Cran, Lesmurdie, Banffshire, bought seven yearlings at £11, eight two-year-olds at £13 10s.; and six Highland queys at £8 5s.; the manager at Piriesmill, Huntley, bought a lot of two-year-old cross stots at £17; Mrs. Riddell, Kildrummie, sold a lot of two-year-old cross stots at £14 7s. 6d.; Mr. Tolmie, Ballspardon, bought a lot of Highland stirks at £7 5s.

CLUN FAIR.—Earl Powis purchased thirty early shearling wethers, at 51s. per head, for feeding purposes. The price of pigs has also been decidedly reduced during the past week: the business done was very limited; but the sale in sheep was brisk, at fair prices, considering the recent reduction. Wool continues to decrease slightly in value, and many sellers are determined to hold back, in consequence, as they fancy, of the reduction being only temporary.

DROITWICH FAIR.—The quantity of stock was limited, attributable to cattle-plague restrictions. The quotations were as follows: mutton 8d. to 9d., lamb 10d. to 10½d. per lb. But little doing in pigs; prices somewhat lower.

GIFFORD JUNE TRYST.—The prices realized have no precedent in this part of Scotland. Those on sale to-day were chiefly half-bred and blackfaced wedders, and a lot of Cheviot gimmers and lambs. The former would be up 7s. 6d. each from last year, and blackfaced wedders from 3s. to 5s. A complete clearance was effected by midday. The subjoined were the principal transactions: Mr. Clapperton sold the Mayshiel blackfaced wedders (rough) at 40s., Tullashill ditto at 45s., Cheviot gimmers and half-bred lambs at 70s. The Priestlaw blackfaced wedders fetched 45s. Messrs. Chrichton bought the Shirraside half-bred wedders (clipped), at 52s., and the Hermiston Mains lot of ditto at 51s. 6d. Mr. Bertram, Gilchriston, sold a lot of half-bred wedders (clipped) at 49s. 6d. Mr. D. M'Niven purchased the Priestlaw Park lot of blackfaced wedders at 42s., and two lots at 40s. respectively. The market was described by both sellers and buyers as very dear. The best class of draught horses fetched from £30 to £50, the secondary kinds from £15 to £25, harness horses from £18 to £35, and ponies from £10 to £25. Mr. Gray, Edinburgh, sold cart horses at from £30 to £44, and purchased ditto at from £25 to £49. Mr. Torrance, Edinburgh, sold cart horses at from £25 to £45, and ponies at from £15 to £28. Mr. Hamilton, Haddington, sold draught horses at from £25 to £32. Mr. Wilson, Edinburgh, sold riding horses at from £15 to £35. Mr. Innes, Edinburgh, sold draught horses at from £15 to £20.

GLOUCESTER MONTHLY MARKET was well supplied with fat sheep, which sold at from 8½d. to 9d. per lb., with a good demand. Fat pigs realized 10s. to 10s. 6d. per score, but the sale was slow.

INVERNESS MONTHLY MARKET.—The stock consisted mostly of Highlanders and year-old crosses. The few lots of two-year-olds met with a ready sale. The following are a few of the sales: Mr. Maclean, V.S., Inverness, sold a lot of two-year-olds at £16 10s.; Mr. John Murray, Culloden Muir, sold a lot of queys at £8, and a lot of stirks at £6; Mr. Wm. Macbean, Inverness, sold a lot of Highlanders at £8; Mr. Roderick Campbell, Lower Muckovie, sold a lot of two-year-old Highlanders at £9; Mr. Rose, Lonie, Petty, sold a lot of two-year-old crosses at £16 5s.; Mr. Robertson, Dalziel. sold a lot of two-year-olds at £15 15s.; Mr. Macbean sold a lot of two-year-old stots at £9 5s.; Mr. Fraser, Balloch, sold a lot of two-year-old cross stots at £13; Mr. Hendries, Castleheather, sold two-year-old stots at £34 the pair, and a cow at £10 10s.; Mr. Garden, Viewfield, sold a pair of cows at £34; Mr. Paterson, Knocknagael, sold a lot of stirks at £9 12s. 6d.; Mr. Fraser, Erchit, sold a lot of Highland stots at £7; Mr. Paterson, Balrobert, sold a lot of Highland stots at £12; Mr. Hendrie, Castleheather, sold a lot of eight-five three-year-old black-faced wedders at 45s.; Mr. P. Anderson, Resaure, sold a quey to Mr. Hendrie, Castleheather, at £10 15s.; Mr. Christie, Stirling, bought a lot of two-year-old crozses at £17, and several lots of cows from £12 to £18; Mr. H. Fraser, Balloch, sold a lot of Highland stots at £9.

LEDBURY FAIR was well supplied with sheep, the sale of which was tolerably brisk at from 8d. to 8½d.; fat lambs selling at from 9d. to 10d. per lb. Cattle are still excluded from the fair; but Mr. Hartland had a good sale near the town of cows in-calf and with calf, and some barrens and steers from the herd of Richard Brooke, Esq., of The Grove House, the two former classes realizing about £14 a head. A number of very useful cart-horses and some few nags, for both of which high prices were asked, and consequently business was not brisk. Pigs were plentiful, but the sales were somewhat flat.

NEWARK FAT STOCK MARKET.—Sellers held back from the prices offered by buyers. Of sheep there was a very limited number, prices varying from 7½d. to 8½d. per lb. Lambs 38s. to 40s. each.

PENRITH FORTNIGHTLY MARKET.—Sheep brought from 8½d. to 9d., and lambs from 10d. to 11d. per lb. Several calves were brought into the town, but before they arrived in the market they were disposed of to the butchers at from £3 10s. to £4 a head.

SALISBURY FORTNIGHTLY SHEEP MARKET.—The supply was good, both as regards number and quality, and there were some excellent lambs also. A steady demand prevailed, and a clearance was effected. Best mutton at from 8d. to 9d. per lb., lamb 1s. per lb.

STOCKLAND FAIR was well attended; between 300 and 400 sheep (besides lambs) were driven in and fetched good prices. Still, sales were not brisk; prices were in advance of Whiddon. Pigs were plentiful, and ranged high. The attendance was not up to the average, owing, no doubt, to the hay harvest and the sowing of root crops.

TAUNTON FAIR.—The supply of sheep was short, but business was not brisk, prices averaging about 7½d. per lb. The horse fair was well attended, but there were very few good animals, and the business transacted was limited.

IRISH FAIRS.—CARLOW: The fair was tolerably well supplied with store stock, which was in brisk demand at a slight advance in prices. Graziers were disposed to purchase freely, owing to the improved state of pastures since the late rains. Fat stock very limited. Some fat grass Kerries were bought by Mr. Oliver of this town at £12 each. Mr. Edward Coghlan, Ballinadrum, sold a lot of two-year-old bullocks at £8 15s. each; Mr. Thomas Corrigan, Cappagh, sold a lot of yearling heifers at £6 2s. 6d. each; Mr. Michael Nolan, Ballaghmore, sold a lot of two and three-year-old bullocks to Mr. Dunne, Queen's County, at £13 each; Mr. Conran, Hacketstown, a lot of two-year-olds, at £11 10s.; Mr. William O'Brien, Ballvally, a lot at £9 17s. 6d. Mr. Michael Neill, Hacketstown, bought a lot of fat sheep at 70s. each; Mr. Doyle, Castledermot, sold a lot of fat ewes at 52s. 6d. each; Mr. James Nolan, Tinneclash, refused the same figure for another lot. There was a slight decline in the price of wool, which brought 1s. 6d. to 1s. 7d. per lb. The following were the average prices: Three-year-old bullocks and heifers £11 to £13, two-year-olds £10 to £12, yearlings £7 to £9, half-year-old, £3 10s. to £5 each. Beef scarce and dear. The few fat beasts offered were sold at from 65s. to 70s. per cwt. Springers and milch cows scarce and dear, and of rather an inferior quality generally; prices from £13 to £18 each. Fat sheep in fair supply and good demand, at 7½d. to 8d. per lb., out of wool. Fat lambs 28s. to 35s., store ditto 22s. to 25s. each. The fat-pig fair was well supplied, and also well attended. Pork declined 2s. per cwt., the average price being 56s. 6d. per cwt. Store and small pigs dear.

SALE OF STOCK.—On Monday a large sale of stock took place in Pershore. Mr. George Hemming was the auctioneer, under whose able direction the greater portion were disposed of at fair prices. Fat sheep, shorn, realized from 36s. to 66s. each. Lambs from 27s. to 35s. each. The three fat cows averaged about £22 each. Several of the pigs realized good prices. Proceedsof the sale, nearly £1,800.

LIVE-STOCK SALE.—EDINBURGH: A large attendance and demand good, and an advance on mutton of 1d. per lb. Lambs much about the same. Several kinds of half-bred hoggs sold in lots from 50s. to 63s., and a great number of smaller sheep sold in lots from 38s. to 45s. Tups and ewes sold from 50s. to 78s. a-head. A large number of lambs sold from 34s. to 42s., and smaller kinds from 23s. to 30s. a-head.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

The month of June, so far as weather is concerned, has partly made up for the disasters of May; but the crops of early fruit were then nearly lost, and so past hope. Apples are better, though many localities complain. The grass-lands have greatly improved. Hay-cutting has commenced; and many fields will yield a good return, in consequence of the abundant rain; but the crop has yet to be gathered. All spring corn has revived, and we may have a fair gathering of it this year; but the sudden change from almost winter to summer heat has not suited the wheat, which has been forced up without sufficient tillering, and, generally, reports are against this important crop. In France and Belgium the same prospects are entertained as regards wheat; but there are no complaints from Germany or Russia. There are, however, very poor accounts of the winter-sown wheat from America, and a large reduction from the average produce is expected, the changefulness of the season and the absence of labour having been severely felt alike in the North, South, and West.

In the midst of all this, our deficiency of last year has begun to tell; and now that war on a gigantic scale has commenced in Germany and Venetia, our markets, which were dull and doubtful up to almost the close of the month, have become suddenly roused by the position of England in regard to future supplies. London, which perhaps was less excitable than any other locality, has recently noted a rise of 7s. to 8s. per qr., though the averages, which only describe a business trade, have scarcely varied. Farmers in many places have completely changed their tone.

Our anticipations, which for some time had all been this way, and had been repeatedly avowed, were doubted or taken as the dictation of speculators; and those who believed in our integrity, though accepting our good wishes, only shook their heads. Facts are stubborn things. Our supplies of home-grown oats, barley, beans, and peas have become woefully short, in consequence of exhaustion; and though 1864 did much to supply the deficiency of 1865, our deliveries, being 61,000 qrs. short this month, as compared with last, tell us the wheat-stacks are disappearing and the garners getting empty of that grain which is the farmer's chief stay. We have, moreover, yet to feel the consequences of the attack of about one quarter of a million of cattle by the murrain; and the fairest countries of Europe have also to experience the desolation of war. We, therefore, yet expect a higher range of prices; and what if the harvest be unpropitious as regards the weather?

The following prices were recently quoted at the several places named: The best red wheat at Paris 51s. 6d., white to 54s. per qr., red at Antwerp 49s., at Hamburgh 50s., at Stettin 45s., in Holstein 46s., in Pomerania 46s., at Cologne 45s. Dantzic has had orders for fine new highmixed wheat at 60s. per qr., cost and freight, which could not be executed. At Genoa prices have risen rapidly, and the Italian demand has been sharply felt at Marseilles and Odessa, causing a rise at both places of 2s. to 3s. per qr. In short, no quotations are reliable in the present excitement; but we beg to say that, before New York knew anything of the change, spring red wheat was there quoted 53s., and amber Michigan 64s. per qr., there being no red winter.

The first Monday in Mark Lane commenced on the back of a small supply of home-grown wheat: but the foreign arrival was the largest this year, being nearly 30,000 qrs., about half being from Dantzic. The morning's show from Kent and Essex was scanty, and the rain of the previous week had deteriorated the condition of several samples. Still, there was no giving way in price, country markets being relatively dearer. It being generally believed that the proposed Congress would lead to no result, there was more firmness in the foreign trade, and large sales were made for future delivery. Cargoes afloat, of good quality, went off well at the previous rates. Reports of the country markets varied. Some still were dull, but more were 1s. per qr. dearer. Among these were Boston, Newcastle-on-Tyne, Manchester, Leeds, and Wolverhampton. Others were up 1s. to 2s. per qr., as Bristol, Bury St. Edmunds, Birmingham, and Gloucester. Ipswich and some other towns were fully 2s. per qr. dearer. Liverpool noted a rise for the week of 2d. to 3d. per cental. Glasgow and Edinburgh, as well as Aberdeen and other places in Scotland, were 1s. per qr. higher. With short supplies at the Irish markets, home produce was held at more money, and the prospect of war in Germany hardened the value of foreign both at Dublin and Cork.

The second Monday had rather more English wheat in the week's returns; but there was a diminution of 10,000 qrs. in the foreign arrivals. With but a moderate exhibition of samples on the Essex and Kentish stands, in somewhat improved condition, and with the tone of the country markets beyond that of London, factors at first demanded an advance of 2s. per qr.; but it was found millers were in no disposition to meet these views, and 1s. was eventually accepted, where sales were made. The weather having been forcing, there was less disposition for business in foreign than on the previous Friday; but the fact that Austria declined attendance on Congress made foreign holders unwilling to sell at less than 1s. per qr. advance. Cargoes afloat went off readily at this improvement. Though the weather throughout the week was highly favourable, there was so little on offer at the several country markets, and confidence in the future was so general, that the dullest localities evinced unwonted activity, these being Birmingham, Oakham, Louth, and Gainsborough. Gloucester, Market Rasen, Market Harborough, Newark, Rugby, and other localities were up 1s. More were 1s. to 2s. per qr. dearer, as Hull, Spilsby, Uppingham, St. Ives, Melton Mowbray, Manchester, and Lynn: while Bristol, Boston, Bourne, Spalding, Stockton-on-Tees, Sheffield, Rotherham, and Worksop noted an improvement of fully 2s.; Ipswich, Sleaford, Rochester, and many other towns noting a rise of 2s. to 3s. per qr. Aberdeen, Glasgow, and Edinburgh were severally dearer 1s. per qr. Native and foreign wheat at Dublin and Cork were each held at 1s. per qr. more money.

The returns for the third week showed a limited supply of native produce, and some decrease in the foreign arrivals, though these were still good. During the morning there were but few fresh samples from Kent and Essex. With the country markets still taking the lead, and the certainty and imminence of war on the Continent, factors found no difficulty in making 2s. to 3s. per qr. more money. The foreign trade had a still more buoyant aspect, some Banat and Baltic wheat having been sold at 4s. per qr. advance; but, generally, the rise quoted was not over 2s. to 3s. Floating cargoes went off well, at 2s. per qr. improvement; and the aspect of the trade was more confident than for years past. The country markets this week did not fail to note the altered trade in the Metropolis, and in many places outwent London factors; indeed, there was so much excitement that the quotations could not be deemed certain. Two shillings to 3s. per qr. advance was about the lowest advice; 3s. to 4s. was more general; and in some towns as much as 6s. per qr. more was paid, as at Stockton-on-Tees. Liverpool, on Tuesday, noted a rise of 6d. per cental, and on Friday of 2d. more. Edinburgh was only 2s. per qr. higher, Glasgow 2s. to 3s. The altered aspect of things at Dublin made holders so high in their demands, that scarcely any business could be done.

The fourth Monday in Mark Lane commenced on a short supply of English wheat, and a moderate arrival of foreign. The morning's show from Kent and Essex was short, and sales were readily offered at 3s. to 4s. per qr. advance on English qualities. There was a good attendance from the country, and prices of foreign were very various. Russian sorts, which had been the favourites, being more plentiful by steamer, the rise on these qualities was a bare 2s. per qr.; but Baltic qualities were saleable freely at an advance on the previous Monday of 3s. to 4s. per qr.

The imports into London for the four weeks were 14,554 qrs. English wheat, 80,545 qrs. foreign, against 18,973 qrs. English, 78,393 qrs. foreign in 1865. The imports into the kingdom for four weeks to the 16th June were 1,946,444 cwt. wheat, 388,494 cwt. flour, against 2,436,805 cwt. wheat, 277,216 cwt. flour for the same period in 1865. The London averages commenced at 48s. 9d., and closed at 49s. The general averages opened and closed at 47s. 4d.; so, while the past month shows scarcely a shade of difference, the last ten days' business not being in the returns will exhibit a total change. There have been no exports of wheat or flour from London.

The flour trade, with prices almost stereotyped for a long period, has, at the close of the month, exhibited a more altered character than the wheat market. Low country sorts and Norfolks had for a long period been as dull as drugs; but the falling-off of American supplies had been gradually hardening the market; then came a sudden rise in France of 8s. to 9s. per sack on the commencement of war in Germany, placing the Paris market relatively above our own; so that with two main sources of supply stopped, we appear to be completely thrown upon our own resources—a fact so totally disbelieved in, that dealers have all been taken aback. Town millers on the third Monday raised the top price to 50s. from 46s., and Norfolks, which at the commencement of the month were difficult to quit at 31s. 6d. per sack, have now become as difficult to procure under 41s. per sack. French have risen to 44s. per sack, and barrels from the small stock on hand have ceased to be marketable, except at high retail quotations—say to 32s. per barrel. The imports into London for the four weeks were 63,882 sacks English, 8,977 sacks foreign, against 57,277 sacks English, 2,395 sacks 50 barrels foreign for the same period last year.

The barley trade has improved for all sorts to the extent of 2s. per qr. There being a continuous small demand for malting purposes on extremely limited supplies, caused this advance on the better kinds; and though foreign arrivals this month exceeded the last by 8,000 qrs., so reduced are stocks in granary, and so exhausted are country stores, that buyers have had to pay 30s. per qr. for Danubian sorts, weighing only 50lbs. per bushel. The imports into London for the month were 1,866 qrs. British, 33,095 qrs. foreign, against 1,551 qrs. British, 37,777 qrs. foreign for the same period in 1865.

The malt trade has not felt the general excitement, but has remained dull at last month's rates.

The oat trade has been subject to great fluctuations, more especially in low Russian and medium sorts. For the first fortnight the state of the money market and large arrivals caused a decline of about 2s. per qr.; but the latter half of the month notes a recovery to the same extent, as the consequences of greater quiet in money matter and the commencement of war in Italy and Germany. But all through the month the best qualities have been steady from the smallness of arrivals, and have perhaps gained in value to the extent o 1s. per qr. Russian oats, weighing 38lbs., finishe at 22s. per qr. The imports into London for th month were 1,567 qrs. English, 663 qrs. Scotch only 70 qrs. Irish, but 186,196 qrs. foreign, agains 2,329 qrs. English, 4,481 qrs. Scotch, 440 qrs Irish, 105,245 qrs. foreign in 1865. There hav been 14,442 qrs. exported this month from London to French and other ports.

Beans, notwithstanding the high price at whic they commenced, have gained in value 1s. per qr. there being so few on hand either English o foreign. The imports into London on four week were 1,479 qrs. English, 1,334 qrs. foreign, against 1,393 qrs. English, 1,998 qrs. foreign in 1865.

Peas ruled very quiet for three weeks, under the influence of better foreign supplies; but, as those fell off during the last fortnight, and a contract for white boilers was out, there was at the close of the month a sudden rise of 2s. per qr. in white sorts, and the common from scarcity were fully as much dearer. The imports into London for four weeks were 700 qrs. English, 6,840 qrs. foreign, against 317 qrs. English, 4,458 qrs. foreign in 1865.

Linseed, with continued short arrivals, and almost nothing in the hands of crushers, has risen 2s. to 3s. per qr., and cakes closed at some advance, in consequence of the general demand.

The seed trade having passed its season felt the monetary crisis sufficiently to prevent all speculation; but the last market showed symptoms of more firmness, both in cloverseed and canary, some of the latter having sold at prices before unattainable; but this trade must necessarily be greatly affected by the weather, which lately has been fine, and the reports in France have been highly favourable as respects the rapeseed produce this season.

Maize has followed the advance on home-grown corn, and has increased in value 1s. to 2s. per qr.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR IN MARK LANE.

		Shillings per Quarter.	
WHEAT, Essex and Kent, white	new	48 to	60
" " red	"	47	55
Norfolk, Lincoln, and Yorkshire, red		47	55
BARLEY 30 to 36	Chevalier, new	39	44
Grinding 30 33	Distilling	34	39
MALT, Essex, Norfolk, and Suffolk, new		60	67
Kingston, Ware, and town-made, new		60	67
Brown		53	58
RYE		26	29
OATS, English, feed 22 to 27	Potato	26	31
Scotch, feed 22 27	Potato	26	31
Irish, feed, white 20 24	Fine	25	28
Ditto, black 20 23	Potato	25	28
BEANS, Mazagan 43 45	Ticks	43	45
Harrow 45 46	Pigeon	48	52
PEAS, white, boilers 39 44 Maple 40 to 44	Grey, new	37	39
FLOUR, per sack of 280lbs., Town, Households		47	50
Country, on shore 40 to 41	"	42	45
Norfolk and Suffolk, on shore		39	40

FOREIGN GRAIN.

		Shillings per Quarter.	
WHEAT, Dantsic, mixed 58 to 60	old, extra	62 to	66
Königsberg 54 60	extra	60	62
Rostock 55 60	fine	60	62
Silesian, red 52 56	white	56	60
Pomera., Meckberg., and Uckermrk.	red old	53	58
Russian, hard, 47 to 51	St. Petersburg and Riga	49	52
Danish and Holstein, red		49	60
French, none	Rhine and Belgium	54	60
American, white 00, red winter 54 to 60,	spring	54	56
BARLEY, grinding 29 to 31	distilling and malting	37	41
OATS, Dutch, brewing and Polands 21 to 28	feed	19	25
Danish and Swedish, feed 21 to 26	Stralsund	21	26
Russian, Riga 21 to 24 Arch. 21 to 23	P'sburg	23	27
TARES, Spring, per qr. small 38 42	large	45	50
BEANS, Friesland and Holstein		38	43
Königsberg 41 to 44	Egyptian, none	00	00
PEAS, feeding and maple 39 43	fine boilers	38	42
INDIAN CORN, white 32 34	yellow	30	32
FLOUR, per sack, French 41 44	Spanish, p. sack	41	45
American, per brl. 25 28	extra and d'ble.	30	32

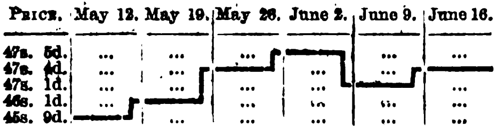
COMPARATIVE AVERAGES.

	WHEAT.			BARLEY.			OATS.		
Years.	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
[illegible]	40,736	53	9	965	33	8	3,868	24	4
[illegible]	58,406	46	11	1,230	32	4	4,925	23	10
[illegible]	[illegible]	39	6	1,821	27	11	3,636	20	0
[illegible]	[illegible]	41	1	1,073	27	3	2,161	23	8
[illegible]	[illegible]	47	4	[illegible]	36	0	[illegible]	25	9

AVERAGES

FOR THE LAST SIX WEEKS:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.
May 12, 1866	45	9	36	4	24	10
May 19, 1866	46	1	36	2	25	2
May 26, 1866	47	4	36	6	25	4
June 2, 1866	47	5	35	4	25	11
June 9, 1866	47	1	35	9	25	8
June 16, 1866	47	4	36	0	25	9
Aggregate Average	46	10	36	0	25	5
Averages last year	41	1	27	3	23	8

FLUCTUATIONS in the AVERAGE PRICE of WHEAT.



LONDON, MONDAY, June 25.—During the past week there has been more inquiry for Cloverseed, both red and white. The former has found buyers at 2s. to 3s. more than could be obtained a fortnight since; and the latter, with small stocks, is held for 4s. to 6s. advance. CUTLER AND BARKER, Seed-factors.

BRITISH SEEDS.

MUSTARD, per bush., white	8s. to	12s.
CANARY, per qr.	46s.	52s.
CLOVERSEED, red	00s.	00s.
CORIANDER, per cwt.	00s.	00s.
TARES, winter, new, per bushel	0s. 0d.	0s. 0d.
TREFOIL	00s.	00s.
RYEGRASS, per qr.	00s.	00s.
LINSEED, per qr., sowing 00s. to 00s., crushing	60s.	68s.
RAPESEED, per qr.	75s.	80s.
LINSEED CAKES, per ton	£9 10s. to	£10 10s.
RAPE CAKE, per ton	£5 10s. to	£6 0s.

FOREIGN SEEDS.

CORIANDER, per cwt.	18s. to	20s.
CLOVERSEED, red 45s. to 56s., white	60s.	80s.
TREFOIL	18s.	23s.
RYEGRASS, per qr.	25s.	26s.
HEMPSEED, small —s. per qr., Dutch	00s.	40s.
LINSEED, per qr., Baltic 58s. to 60s. Bombay	68s.	00s.
LINSEED CAKES, per ton	£9 10s. to	£11 0s.
RAPE CAKE, per ton	£5 0s. to	£6 0s.

HOP MARKETS.

BOROUGH, MONDAY, June 25.—Our market continues exceedingly firm at former quotations, but the demand has been of a more moderate character. Reports from the plantations are very conflicting; in some districts a little improvement is visible; but, on the whole, the condition is much the same as last week, and it is still the general opinion that the crop will prove light. Continental accounts indicate but little change. In Belgium and Bohemia blight is steadily progressing, and the same may be said of the greater portion of Bavaria; but in Alsace and the French districts a decided improvement is observable. New York advice to the 13th inst. report the market as very quiet, the arrivals of foreign hops keeping the trade supplied, the prospects of the growing crop are unfavourable. Gold, after a partial decline, has again advanced to a point higher than before, having now touched 144, which will necessarily affect exports from this side.

Mid and East Kent	105s.,	140s.,	180s.
Weald of Kent	100s.,	120s.,	140s.
Farnhams & Country	100s.,	125s.,	160s.
Sussex	90s.,	110s.,	140s.
Bavarians	130s.,	147s.,	170s.
Belgians	100s.,	112s.,	125s.
Yearlings	95s.,	110s.,	130s.

WORCESTER HOP MARKET (Saturday last).—This market is most scantily supplied with hops of all classes; 1865's sell at the advance of 8s. to 10s. per cwt. (which was established in the early part of the week) on our last Saturday's currency. No old olds offering. Our planters report that the bine has made but little progress in growth during the week; also that there was fresh fly and deposit in quantity on Wednesday and Thursday. We consider the growing crop to be in a very precarious state, but were it free from blight we cannot see, with favourable weather, that this can be more than about half an average yield, the bine being generally so very short and weakly.

POTATO MARKETS.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, June 25.—During the past week the arrivals both coastwise and by rail have been very small, but the trade now being well supplied with new potatoes, very few old ones are required. As the crop of 1865 is now nearly finished this will be our last report for the season.

Yorkshire Flukes	per ton	120s. to 140s.
„ Regents		90s. to 110s.
„ Rocks		70s. to 75s.
Dunbar and East Lothian Regents		90s. to 110s.
Scotch Flukes		120s. to 130s.
Perth, Forfar, and Fife Regents ...		80s. to 90s.
Do. Do. Rocks		00s. to 70s.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, June 25.—These markets are fairly supplied with Potatoes: chiefly new produce. The trade, on the whole, is steady, at our quotations. The imports into London last week consisted of 16,240 baskets from Rotterdam, 1,833 Dunkirk, 28 Boulogne, 139 Antwerp, 94 boxes Valencia, 746 Lisbon, &c., and 12 tons, 70 barrels, 160 baskets from St. Malo.

Regents	old	80s. to 120s.	per ton.
Flukes	„	150s. to 180s.	„
Rocks	„	50s. to 90s.	„
Spanish	new	11s. to 16s.	per cwt.
Scilly	„	11s. to 14s.	„
Jersey	„	11s. to 15s.	„

COUNTRY POTATO MARKETS.—BARNSLEY, (Saturday last): There was a good attendance of dealers at market, and a large wholesale business was transacted. Prince Regents 10s. to 11s., flukes 9s. to 10s., and rock potatoes 7s. 6d. to 8s. 6d. per load. New potatoes were rather dearer than on Wednesday, and sold at 7s. 6d. per hamper; kidneys 3d. and round 1½d. per lb. retail. DONCASTER, (Saturday last): The show of old potatoes at the market was very small, which considerably enhanced prices. Rocks made 8s. to 8s. 6d., Regents 11s. 6d. to 12s. 6d. per load of 18 stones. MANCHESTER, (Saturday last): Potatoes 8s. to 13s., New ditto 32s. to 36s. per 252 lbs. YORK, (Saturday last): The supply of potatoes was limited. Round ones fetched 11s. to 12s. per tub of 280 lbs., and from 10d. to 1s. per peck retail. New potatoes 4s. per score of 21 lbs.

ENGLISH BUTTER MARKET.

LONDON, MONDAY, June 25.—We note a steady trade at firm prices.

Dorset, fine	118s. to 125s.	per cwt.
„ middling	100s. to 110s.	„
Devon	112s. to 114s.	„
Fresh	11s. to 14s.	per dozen lbs.

CORK BUTTER EXCHANGE, (Saturday last.)—The supplies in our market, about 1,600 firkins daily. The demand is fair, and prices continue steady. Since Monday seconds rose from 111s. to 112s., thirds fell from 103s. to 101s., fourths rose from 96s. to 98s., and fifths from 76s. to 78s. About 320 mild-cured firkins arrived during the week. It quotes to-day from 113s. to 116s. The weather continues very favourable for the make of butter.

GLOUCESTER MONTHLY CHEESE MARKET was moderately supplied, about 40 tons being pitched. This met a ready sale, best qualities obtaining 65s. to 67s., and seconds 60s. to 62s. per cwt. A clearance was speedily obtained.

GLASGOW, (Wednesday last.)—A liberal supply of Cheese, which met a fair demand, at full prices. About twenty-four tons passed the weigh-house scales. We continue former quotations, but two or three prime lots of new Cheddar brought from 67s. to 69s. per cwt.; Dunlop, old, 68s. to 74s., ditto new 60s. to 62s; Chedder-made, old, 70s. to 76s., ditto new, 64s. to 66s.; Skim-milk, 26s. to 28s.

NEWGATE AND LEADENHALL POULTRY MARKETS.—Goslings 5s. to 7s. 6d., ducklings 2s. 6d. to 4s., tame rabbits 1s. 3d. to 2s., pigeons 6d. to 10d. each; Surrey fowls 10s. to 14s., ditto chickens 6s. to 10s., barn-door fowls 4s. to 8s., per couple. English eggs 7s. 6d. to 8s., French 6s. to 7s. per 100; fresh butter 1s. to 1s. 2d. per lb.

ENGLISH WOOL MARKET.

CITY, MONDAY, June 25.—There is very little business doing in any kind of wool for home use; whilst the demand for export to the continent is limited. In prices, however, no actual decline has taken place. The Colonial Wool Sales have been brought to a close. Buyers from France purchased about 75,000 bales during their progress.

CURRENT PRICES OF ENGLISH WOOL.		s.	d.		s.	d.
FLEECES—Southdown hoggets	per lb.	1	4½	to	1	5½
Half-bred ditto	„	1	6		1	7
Kent fleeces	„	1	7		1	8
Southdown ewes and wethers	„	1	4		1	5
Leicester ditto	„	1	5		1	7
SORTS—Clothing	„	1	4		1	8½
Combing	„	1	3¼		1	9½

BRADFORD WOOL MARKET, (Thursday last.)—The lapse of another week has revealed no manner of improvement in the English wool trade. No new demand has sprung up, and transactions have been consequently confined to the small purchases of spinners who have exhausted their stock, and require to keep some portion of their machinery at work. The influence of this long-protracted time of quiet, while the rates of money make it so important to be turning over stock, is very disastrous to prices. The value of wool is lowering every day, and staplers who have sold to-day have accepted prices from 1d. to 2d. below even last week's rates. It is true there are staplers who will not yield in this way, and who are determined to hold on till things take a turn. Comparatively little of the new clip has yet come to market. Farmers are as yet loth to part with their stocks at the ruling rates, and will not believe in the full depression till their respective local fairs, now soon to be held, shall reveal the unwelcome truth. It is worthy of notice that colonial wool does not seem to share at all in the depression of our market. The opening rates have been firmly maintained throughout at the London wool sales, and last night there was even an improvement manifest.

EPSOM WOOL FAIR.—The annual wool fair in connection with the Surrey Agricultural Association was held at the King's Head Hotel, Epsom, on Wednesday. The unfavourable state of affairs at home and abroad had a telling effect upon trade, the consequence being a very short supply of wool and literally no business doing. At three o'clock between 30 and 40 gentlemen sat down to an excellent dinner. Mr. Page presided, S. Pagden, Esq., being in the vice-chair. Ample justice having been done to the good things provided by the worthy host, and the cloth having been removed, business was then proceeded with, and Mr. Bennett offered his teg and ewe fleeces for 1s. 6d. per lb. Mr. Hatch offered his 228 Down fleeces at 1s. 6d. Mr. Greig, who had a fine sample of Down wool, offered it at 1s. 7d. and 1s. 6d. Mr. Overton offered 150 Down fleeces at 1s. 6d. Mr. Freeland offered his Down teg fleeces at 1s. 6d.; and Mr. Arnett offered 237 teg and 20 ewe fleeces at 1s. 5d. No buyer could be found at these prices, and the Chairman (Mr. Page) then offered his wool at 1s. 6d. for the half-breds, and 1s. 4½d. for the lambs. Mr. Ranford offered 1s. 5d. for the half-breds, and 1s. 3d. for the lambs. Mr. Page said he would take 1s. 5d. all round. Mr. Ranford agreed to this price, and bought the lot. The Chairman then proposed the health of the buyers, coupled with the name of Mr. Ranford, who was the only buyer that day. The toast was heartily drunk; and Mr. Ranford having suitably returned thanks, several attempts were made to effect sales, but without success, and the fair closed, only one lot of wool having changed hands.

LEEDS (ENGLISH AND FOREIGN) WOOL MARKETS, (Friday last.)—The high rate of discount and diminished demand for goods tend to lower the price of English wool, and so long as these causes operate, buyers purchase only what they absolutely need. There has been a fall on some sorts of 20 to 25 per cent. since the early part of last month. There is no change to report either in price or demand for colonial and other clothing wools.

GLASGOW WOOL MARKET, (Saturday last.)—There is almost no change to report in the aspect of our wool market here. Spinners are beginning to make inquiries as to prices, and to look at stocks, but little actual business has resulted. There will not probably be much improvement in the tone of the market until we have some reduction in the Bank rate of discount.—*F. McLeod.*

Printed by Rogerson and Tuxford, 246 Strand, London, W.C.

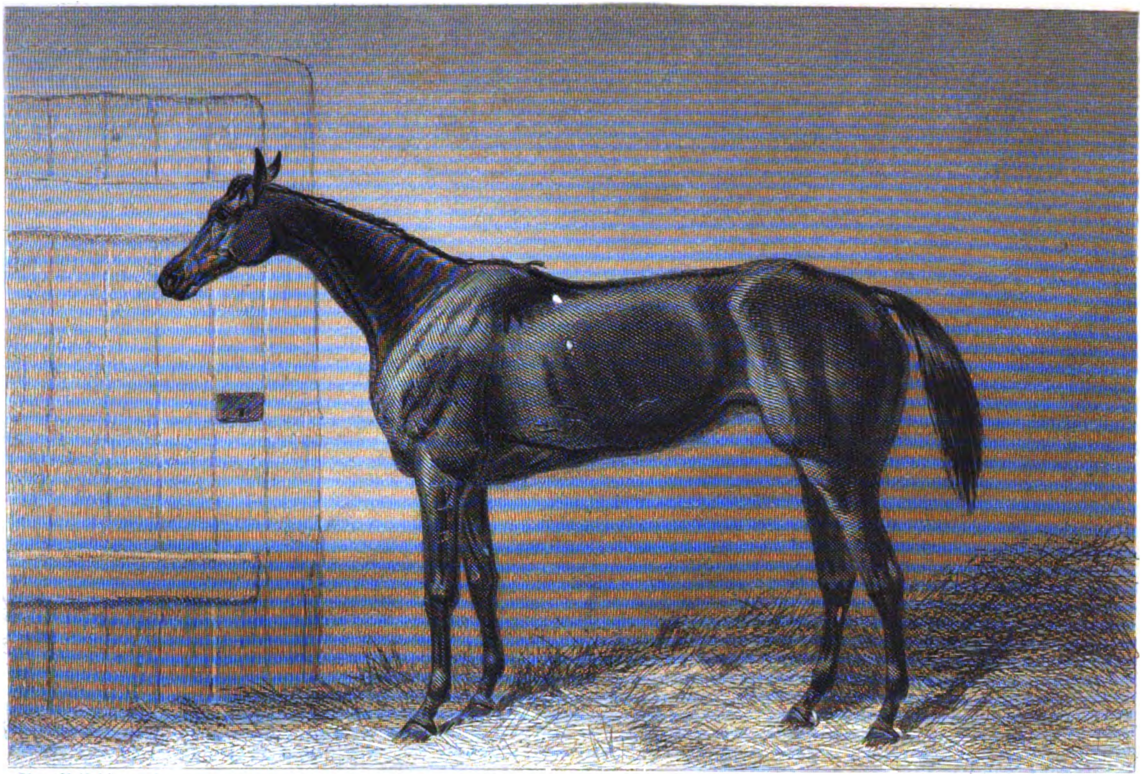
E. Corbet

E. Hacker

Prize Pigs.

The property of the Earl of [illegible] to which was awarded the Silver Cup [illegible]
at the Smithfield Club Show [illegible]

London Published by Rogerson & Tuxford 246 Strand 1866



Harry Hall, Newmarket. E. Hacker

Repulse

London Published by Rogerson & Tuxford 246 Strand 1866

PLATE III.

PRIZE PIGS.

THE PROPERTY OF THE EARL OF RADNOR, OF COLESHILL, HIGHWORTH.

The "Coleshill Pigs" assumed that title on being transferred to Coleshill in 1840. The breed was originally introduced by the late Mr. T. Moore, of Cofton Hall, Worcestershire, who won many prizes with them at the meetings of the Worcestershire Agricultural Association, between the years 1814-1821. A painting of one of them, by Weaver, of Shrewsbury, in 1806, is in the possession of Mr. Moore, of Coleshill, agent to the Earl of Radnor.

Since 1840 they have taken a great number of prizes and medals at the meetings of the Royal Agricultural Society and Smithfield Club; and at Christmas last the three here represented carried off the highest honours of the show, as "the best pen in any of the classes". At local shows they have been almost invariably winners.

The breed is now distributed pretty generally throughout this country, the Continent of Europe, and United States.

The following brief description of these pigs is taken from *Morton's Encyclopedia*:—"The Coleshill breed possess all the requisite qualities for attaining the most profitable maturity at a very early age, and they are of sufficient size and expanding growth and proportions as to equal any in their adaptation for bacon pigs. Their colour is white; their hair rather strong, and thinly set; bone fine in proportion to their size; head small and pleasing; general form very good, being square and compact; their fattening qualities almost unequalled." It is satisfactory to add, that Mr. Moore considers the pigs to be "admirably drawn."

PLATE IV.

REPULSE; A THOROUGH-BRED FILLY.

THE PROPERTY OF THE MARQUIS OF HASTINGS.

Repulse, bred by Lord Derby in 1863, is by Stockwell out of Sortie, by Melbourne, her dam Escalade, by Touchstone—Guznee, by Pantaloon.

Stockwell, bred by Mr. Thellusson in 1849, is by the Baron out of Pocahontas, by Glencoe. A good race-horse himself, and a winner of the St. Leger, Stockwell is by far the most successful stallion of modern times, if not at any era in the history of the turf. He is now the sire of two Derby winners, Blair Athol and Lord Lyon; of one Oaks winner, Regalia; of four St. Leger winners, St. Albans, Caller Ou, The Marquis, and Blair Athol; of two Two Thousand Guineas Stakes winners, The Marquis and Lord Lyon; and of two Thousand Guineas Stakes winners, Lady Augusta and Repulse; as well as of Asteroid, Thunderbolt, Audrey, Lady Ripon, The Duke, Baragah, Argonaut, Breadalbane, Rustic, Achievement, and many other winners. During this season his stock have not only won the Two Thousand and Thousand Guineas Stakes, but also finished first, second, and third for the Derby—a performance, we believe, altogether unprecedented. Mr. Nailor gave 4,500 guineas for Stockwell at the late Lord Londesborough's sale, and the chesnut is still at Hooton.

Sortie, bred by Lord Derby in 1851, was a very good performer at two years old, and once beat Andover, but she did little or nothing in her next season, and threw her first foal in 1856. This was Birdbolt by Chanticleer, followed by Stockade by

Stockwell in 1857; Garrison (dead), by the Flying Dutchman, in 1858; Citadel, by Stockwell, in 1859; Reconnaissance, by Stockwell, in 1860; Forager, by Stockwell, in 1861; Out-and-Outer, by Stockwell, in 1862; Repulse, by Stockwell, in 1863; a colt, by King of Trumps, in 1864; and another colt, by King of Trumps, in 1865. Sortie is still in Lord Derby's stud.

Repulse is a bay mare, standing a good sixteen hands high. She has a neat blood-like head, a light straightish neck, with really beautiful shoulders, great depth of girth, and good barrel and loins. She rises rather high on the rump, and drooping towards the tail, has quarters, if not wide, well let down. Standing straight on her hind-leg she has very good thighs and hocks, and as se viceable arms and knees, with plenty of bone, an is, in fact, all over a great fine mare. When w saw her sold at Doncaster she struck us as bein a particularly promising filly; but she came ou for the Thousand Guineas, which she won, aft evidently having wintered badly, looking light an hurried, and with a coat as long as a donkey's.

Repulse was knocked down at the Doncast sale just referred to for 410 guineas, the purchase being Mr. Jackson; but the filly was subsequentl sold to Lord Hastings for 2,000 guineas, wit "contingencies."

THE IMPURITIES OF OUR DRAINAGE WATERS.

BY CUTHBERT W. JOHNSON, F.R.S.

The foreign substances contained in the water which descends in rain upon and drains from our soils, have hardly been regarded with the attention that the question deserves. In fact, it is only in very modern days that it has been generally understood that in the eternal circle, which water follows from the atmosphere to the earth, and from the land to the sea, and from the ocean again rising in vapour into the atmosphere, vast amounts of solid substances are carried by that water into the ocean, either in chemical combination or in mechanical suspension.

Our forefathers supposed that rain was pure water, and that it did nothing to support the farmer's crops, but by furnishing them with the necessary moisture. The modern discovery that rain and snow-water contain ammonia, nitric acid, and in still smaller proportions other substances, naturally afforded an additional reason for the beneficial effect of our golden showers. The amount of organic, earthy, and saline matters removed from the soil by that rain water, as it drains into our streams, and thence into the sea, was a much earlier regarded fact. It has been, however, only in very recent periods that any serious efforts have been made to arrest those impure waters, and render them serviceable in irrigation. It is an inquiry yet proceeding, and one whose results will, we are assured, become of far more value to the agriculturist than at present.

Professor Way, some time since, analyzed the rainwater falling at Rothamsted, in Hertfordshire, some twenty miles from London, and also specimens of the waters from the land-drains on the farm of the late Mr. Paine at Farnham, in Surrey (*Jour. Roy. Ag. Soc.*, vol. xvii. pp. 133-143). In an imperial gallon of the landwater, he found in two specimens the following substances (the weight being given in grains):—

	I.	II.
Silica	0.95	0.45
Phosphoric acid	trace	0.12
Sulphuric acid	1.65	5.15
Chlorine	0.70	1.10
Lime	4.85	7.19
Magnesia	0.68	2.82
Peroxide of iron and alumina	0.40	0.05
Potash	trace	trace
Soda	1.0	2.17

Then as to the soluble organic matter, ammonia, and nitric acid found in land-drainage waters, in seven different specimens, from the lands of Mr. Paine, the were obtained (grains in imperial gallon):—

	Soluble organic matter.	Nitric acid.	Ammonia.
1	7.00	7.17	0.018
2	7.40	14.74	0.018
3	12.50	12.72	0.018
4	5.60	1.95	0.012
5	5.70	3.45	0.018
6	5.80	8.05	0.018
7	7.40	11.45	0.006

The ammonia and nitric acid contained in the rain wate which supplies this drainage water varies considerably i different months. In that falling at Rothamsted, h found (grains) in an imperial gallon in—

	Ammonia.	Acid.
January	0.092	0.017
February	0.104	0.042
March	0.086	0.021
April	0.123	0.035
May	0.080	0.035
June	0.135	0.080
July	0.061	0.017
August	0.080	0.060
September	0.095	0.021
October	0.061	0.036
November	0.054	0.018
December	0.067	0.017

Several of the waters flowing from some drains fields differently manured were furnished to the fessor by Mr. Ackland. These, observes Mr. contained:—

No. 1. Poor clay tillage field. Drained, about years since. Summer before this, young grass dre with dung; fallowed for turnips; present crop now ground manured with dung and 1½ cwt. of superphosp also with guano and wood ashes; drained with two-i pipes, about three feet deep; water continually run for last three weeks. This sample contained in the perial gallon, in grains:

Nitric acid	4.78
Ammonia	0.008

No. 2. Poor clay tillage field. No manure last y wheat about 7 bushels per acre this year, being very p naked fallow; drained with two-inch pipes, three deep; continually running for last three weeks. sample contained:

Nitric acid.........	2.99	in the imp. gall.
Ammonia ....a trace		

No. 3. Shelving pasture (clay). No manure; not watered; drained last year with two-inch pipes three feet deep; continually running ever since:

Nitric acid.........	0.628	grs. in the gall.
Ammonia...........	0.012	

No. 4. Clay water meadow. Well watered every day with wash from a dwelling-house:

Nitric acid...	0.12
Ammonia	0.012

No. 5. Pasture sandy soil. No manure; drained with three-inch pipe four feet deep last year; water not stopped running:

Nitric acid	0.485 per gall.
Ammonia	trace.

But the impoverishing action of water upon the soil is not confined to the organic and mineral matters removed from it in the bright waters of our land-drains and springs. As these flow on towards the sea, they become more impregnated with the finely-divided matters of the land, both in chemical combination and mechanical suspension; their increased volume renders their action more powerful upon the strata through which they flow. Nature does much in this way, and man does all he can to render the river-waters still more impure, by pouring into them all kinds of foul matters.

We may contrast the composition of the flood-waters of the Nile—a river that Nature only renders turbid—with that of our own Father Thames, whose waters are chiefly rendered impure by the considerable efforts of mankind.

Amongst the several valuable conclusions to which the commissioners appointed to inquire into the pollution of our rivers have arrived, they state that "sewage from towns, villages, and houses on the banks of the Thames pollutes the water, and that it is also fouled by refuse from paper-mills and tanneries, and also by the floating carcases of animals."

The specimen of Nile water analyzed by Professor Voelcker (*ibid*, vol. xxv. p. 236) he describes, when taken at the height of the flood, to be a bright, almost blood-red colour. On standing for a considerable length of time it lost its colour, and deposited, per imperial gallon, 87.51 grains of solid matter, which consisted of

Mineral substances (extremely fine clay and sand, containing a great deal of oxide of iron)... ...	81.66
Organic matters	5.85

The filtered and clear water, on evaporation and drying at [illegible] deg. Fahrenheit, furnished 11.88 grains of solid residue per imperial gallon. This residue, on analysis, yielded

Organic matter	1.54
Oxides of iron and alumina, with traces of phosphoric acid	1.04
Carbonate of lime	1.41
Silicate of lime	3.87
Sulphate of lime...	1.32
Chloride of sodium	.79
Carbonate of soda	.48
Nitrate of potash	.84
Carbonate of magnesia	1.15

The red colour of this Nile water he found not to be due to organic matter, but to extremely finely-divided oxide of iron. This red peroxide remains in suspension for weeks together, and thus imparts a bright-red colour to the water.

Some specimens of Thames water examined by Dr. Angus Smith were found to contain in an imperial gallon, taken at different places,

	Organic.	Inorganic.
Off Chelsea	4.02 grains.	23.60 grains.
Off Hungerford	13.07 "	47.55 "
Off Southwark-bridge ...	13.12 "	43.12 "

So that Thames water contains about double the amount of organic matter than that of the Nile.

The value of the impurities contained in different waters has not escaped the notice of the German chemists. In the present volume of the *Journal of the Royal Horticultural Society of London*, p. 113, will be found a valuable paper by Professor Schulz-Schultzenstein "on the nutritive constituents of water;" and in this he gives a very interesting detail of the foreign substances found in many of the continental springs and rivers. The Professor tells us that

"The waters of Wiesbaden contain 1.75 grains of organic extract in the pound; those of Hermansbad, near Moscow, 1.5 grains; those of Seidschütz, 0.35-0.42 grains of humous extract; those of Wildbad, in Baireuth, 0.6 grains of extractive matter; those of Kreuth and Tegernsee, in Bavaria, 1-10th grain, according to Vogel; those of Beringerbad, in the Lower Hartz, 0.5 grains of extractive matter in the pound; those of Bocklet, near Wörzburg, ¾ grain of humous extract per pound. In many bath-waters there is contained a nitrogenous extractive matter. For instance, the waters of Schmekwitz, in Bautzen, contain 6.5 grains of nitrogenous extractive matter, 10.8 grains of saponaceous matter, 1.3 grains extractive matter in 30lbs.; those of Châteauneuf, in Puy-de-Dome, and Enghien, near Montmorency, contain 0.3 grains per pound of animali-vegetable matter. The glairine—a gelatinous matter in the sulphur-springs of Baréges, in the Pyrenees—is of a similar character, and is so abundant in the sulphur-springs at Aachen and Burtscheid, according to Mohnheim, that the daily produce amounts to about 1,000lbs. A similar organic substance is left from the spray of the Karlsbad water, on the margin of the spring, and affords a matrix for the development of the vast masses of *Oscillatoriæ* which are found there. The mother-lye of the water of the Baltic contains two kinds of extractive matter; and in many other waters, as in those at Northeim, near Göttingen, and at Warmbrunn, in Silesia, there is resinous and gummy extractive matter. The Berlin spring-waters contain from ¾ to 1½ grains of humous extract per quart. All these waters, therefore, when kept, are subject to more or less rapid decomposition, and give rise to infusorial and conferval organisms.

"Now, since all river-water is derived from springs, it is clear that it must be rich in humous and extractive matter. As regards the quantity of humus in river-water, we have at present only very confined observations: but little attention was given to the subject so long as the important agency of the quantity of humus contained in water upon vegetation was unknown. It is, however, sometimes so great that it communicates a yellow, or in great depths a coffee-coloured, or even dark-brown tint. The black streams first attracted attention in America, where the Rio Negro, or Black River, derived its name from the dark colour of the water, as also many tributaries of the Oronoko. The Atapabo, Guiainia, and Tuamini are of a dark coffee-brown. Lyell states, in his 'Travels in North America,' that in the vast swamps in the narrow Atlantic plain of North America, especially in the Great Dismal, between Norfolk and Welden (between Virginia and North Carolina), there is a lake seven miles long and five wide, whose waters are of a dark-brown.

"The 'blackwaters' (Karassu) which are often found on the mountains of the East derive their name equally from the brown or black colour of their waters.

"Very recently Junghuhn, in his travels in Sumatra, directed his attention to the 'blackwaters.' He says: 'The mountain-streams of the Batta-land of Sumatra, especially on the table-land of the provinces of Sieperok and Tobah, have a coffee-brown tint. In the beds of the rivers shaded by forests their water appears very dark, but of a golden yellow, in a transparent glass. This tint is universal in the interior of Sumatra; but it is most striking in the high table-land, where the slight inclination of the surface, in the dark primeval forests, gives rise to frequent inundations, and where, besides the vegetable substances which rot upon the moory ground, a quantity of root-threads are irrigated with water, which, impregnated with the extractive matter which enters into their composition, forms a kind of cold infusion. The water may, nevertheless, be drunk without injury, and is void either of taste or smell' ('Travels in the Batta Land of Sumatra,' vol. i., p. 256).

"It is rather surprising that the dark waters of Europe should hitherto have been almost entirely overlooked, notwithstanding their appearance in almost every river which runs down from the Hartz, especially the Brocken. The water of Ilse, near Ilsenburg, is at some deeper parts of the river almost coffee-brown. If we follow the river towards the heights of the Brocken, we remark that almost all its sources are derived from dark peat-moors, from which the water streams coloured brown, from their dissolved humous constituents. The same is the case with the other rivers of the Upper Hartz, especially on north side of the Brocken. Almost all the fresh-water lakes of the marsh districts of Northern Germany are black from humous matter.

"I have endeavoured, by means of evaporation, to ascertain the quantity of humus in different German river-waters. Four pounds and a half of that of the Spree yielded, on evaporation, 4 grains of solid residuum, of which 3 consisted of salts, the other of a humous extract. The Spree water is, for the most part, not entirely colourless, but has a yellowish tint: on evaporation, it acquires a brown tint as it becomes more concentrated. Every pound of it contains 2-9ths of a grain of humous extract: a cubic foot, therefore, or 66lbs., contains 14⅔ grains. According to observations made at the Berlin Mills, 576 cubic feet pass every second at low flood, 2,016 at high flood, the mean of which is 1,296. At low flood, then, there are 2,072,600 cubic feet per hour, or 49,766,400 cubic feet per day, or in weight 29,859,840 cwt. This, then, contains 422 cwt. 100lbs. of humous extract, which quantity passes through Berlin on its way to the sea.

"The turbid water of the Elbe, collected at Magdeburg in August, 1851, became clear when allowed to settle, with a very slight yellow tint. Four pounds of this evaporated to a coffee-brown fluid; and this, when freed from the sediment of salts of lime and silicates, yielded 6¼ grains of humous extract, free from water. The Elbe-water is, therefore, far richer in humus than that of the Spree—the richest, indeed, of all which I have examined, although it is by no means so deeply coloured as the Hartz-water. It contains more than 1¼ grains of humous extract per pound, which in the cubic foot amounts to 107½ grains. If we assume that 4,000 cubic feet per second pass by Magdeburg to the sea, which is double that of the high flood of the Spree, we have for the twenty-four hours 14,400,000 cubic feet; and this will supply daily, if 100 grains of humus only be reckoned to the cubic foot, about 1,798 cwt. of extractive matter which can be appropriated to the nourishment of plants. We see, then, how rich the waters are in nutriment.

"The water of the Ilse, at Ilsenburg, collected in August, 1851, gave, after the evaporation of 4lbs., grains of humous extract, which is half-a-grain p pound.

"The water of the neighbouring Ecker, which browner than that of the Ilse, in 4lbs. yielded 2¼ grai of very dark humous extract. Two quarts of water the black Elster, collected at Herzberg, gave, after ev poration, a treacle-brown fluid, which, reduced to perfe dryness, gave three-fourths of a grain of saltpetre and grains of humous extract. The Rhine, at Basle, pas 13,000 cubic feet of water per second (which, reckoni half-a-grain of humus to the pound, contain 56lbs 3,360lbs. per minute, 1,832 cwt. per hour, and 43,9 cwt. per day. The Ganges, above its bifurcation at t Delta, near Sicligully, passes in April, according Prinsep, 21,500 cubic feet per second; at Benar 20,000. If there is only half-a-grain of humous extr per pound, or 33 grains per cubic foot, we shall ha 5,100lbs. per minute, 306,000lbs. per hour, and 66,7 cwt. per day. The Indus, according to Prinsep, sen out at its bifurcation at Tatta 80,000 cubic feet per s cond—that is, four times as much as the Ganges, whi yields 267,056 cwt. of humus per day, if the water h only the sixth part of the nutritious matter contained the water of the Elbe. The Mississippi, in the rai season, passes 550,000 cubic feet per second—that i nearly eight times as much as the Indus; and, supposi the same proportion of humus, it sends daily to the 2,136,000 cwt. of humus."

When we compare the composition of these rive waters with that of the streams so extensively and profitably employed in the irrigation of meadow-land, can hardly avoid the conclusion that far more is yet to accomplished by their employment in agriculture. Thu an imperial gallon of the bright water issuing from th Southern Chalk Formation, at Croydon, was found contain:

Carbonate of lime	15.41	grains
Carbonate of magnesia	0.61	„
Sulphate of lime	0.53	„
Common salt	1.51	„
Alkaline sulphates	1.03	„
Silica	0.93	„
Organic matters	1.09	„
	21.11	grains

This is about the average composition of all the sprin issuing from the Southern Chalk Formation—springs th water the celebrated irrigated meadows of the valleys the Avon, the Itchen, the Test, and the Kennet. would be a mistake, however, to conclude that the add tion of a larger portion of organic matter to these brig waters does not largely increase their fertilizing power The holders of the fine water-meads on the banks of t Itchen, for instance, are well aware that the portion the drainage of the city of Winchester that is pour into that copiously-flowing stream very materially ad to its value for the purpose of irrigation. If, then, t value of water for the use of the irrigator increases wi the amount of its organic impurities, ought we to all the waters of our rivers to flow away, as they now carrying into the sea so large an amount of organic a other matters that might enrich our grass-lands? have on more than one occasion contended that the pu might be to a great extent profitably employed in th rendering available an enormous amount of what is to regarded as the very weakest of liquid manures, at the same time, from its vast extent, the greatest i poverisher of our land with which our agriculturists h to contend.

REAPING AND REAPERS.

BY A PRACTICAL FARMER.

In my young days we used to make some distinction between reaping and reapers: those who cut and gathered with a *sickle* were distinguished as reapers, from those who cut with a *hook*, "a *reaping-hook*." The distinction was not a proper one I admit, but it was generally recognised, and cutting or mowing corn by the *scythe* was never taken to be reaping at all. Now we have all our implements and machines in one category—reaping-machines—the sickle and hook excepted. If in my early days we were not right in our noting a difference, I think we are wrong now in classifying all under one head. I should prefer to distinguish those machines which cut and gather corn into the sheaf as reaping-machines, whilst those which are only adapted for mowing down the corn I would designate simply as corn-mowers, or mowing-machines. My idea (and it is an old-fashioned one) of a reaper combines the gathering with the cutting. It may be immaterial, but it is worth a cursory notice. As the harvest is rapidly approaching, I have chosen the above subject of "Reaping and Reapers" with the view of eliciting from your very many readers some information as to the best machines, the best mode of using them, and the best disposition and management of the men conducting the work.

I shall not take up much space in discussing the merits of the sickle or the reaping-hook; they are fast becoming obsolete, and they are now chiefly used as aids to gather after the scythe or machine. It is true some of our country gentlemen, notwithstanding all the injury done by game, still insist upon certain wheat-fields being cut a certain height so as to leave a good stubble for the preservation of the game. In these now isolated localities this old-fashioned practice of a barbarous age may be somewhat longer retained, and there are a few cultivated spots in mountainous districts where even the scythe is inconveniently worked; as there it may live awhile longer, but ultimately all must give way to the scythe and reaping-machines. The agricultural public and the manufacturers alike are preparing for it. We hear of immense preparations for the ensuing harvest; some of the manufacturer's stock alone consisting of thousands of machines, so that the country will abound in machinery for cutting down the corn in the ensuing harvest. Besides this, the implement has now arrived at such a stage of perfection, that but few real improvements can be effected, so that purchasers may at once supply themselves. If the landlord insists upon a strong stubble for his game, some of them are so arranged that I think this even may be accomplished by a proper regulation of the machine for high cutting: at all events a good cover might be left, if not altogether a stubble after the old standard. Game-preservers will, however, ere long give way to the improvements of the age. Farmers can't afford to waste stubble: it lessens the quantity of manure.

The best reaping-machine.—It would be invidious to select any particular machine and put it forth to the public as the best, when so many are in the course of manufacture, and by so many eminent firms who have received their honours; but certain machines are better adapted for particular work or particular districts than others, and in this way their merits may be discussed. Light cropping districts may be cut by any useful machine; but heavy crops require a great power and strong machines. The district from whence I write is noted for the abundance of straw produced, hence a strong compact machine is absolutely requisite for doing average work. Our lighter crops are readily cut down, and can be well and evenly laid by a side-delivery, or by an endless-web machine, or they may possibly be gathered by an automaton reaper; but this would, I think, be impossible with our heavy crops, very many of which are down, and "thorough grown," so that it requires the strength of the strongest reaper and the power of two good horses to pull through them. A light-made reaper is of no use in such crops; it is not the question of lightness of draught in such cases, but can the machine accomplish the cutting in any way? Very few can achieve such cutting.

It is not the number of units of power expended in the act that is of great importance. Two useful horses will suffice to work any reasonable reaper for a given time; and a relay of horses will always be advantageous in working a reaping-machine, it being required to work during the whole of a long harvest-day. Hence

The best mode of using a reaping machine.—This will mainly depend upon the nature of the work. Good judgment is requisite in setting-out a field before commencement. It is not always wise to take the field or crop as it stands, and proceed with the cutting in a continuous way till all is down. It is better to select those portions of the crop that are most alike in quantity of straw, providing there is a considerable breadth of equal bulk, and lying convenient for cutting. The lighter part of the crop thus selected should be cut first; and in cutting it, most probably the whole breadth of the machine or knife-bar may be in full work, effecting the cutting of a large breadth in a short time. The elevation or regulation of the knife-bar may be then kept at one pitch, so that the whole may go on smoothly and satisfactorily; but if light work and heavy work are taken together, much inconvenience and hindrance arises. The knife-bar would require lowering, or to be set more dipping, to attack successfully every laid or heavy place; neither could the stoutest machine invariably cut at full breadth through the heavy spots or portions of the crop. It is better to divide the crop into separate parts for more expeditious working. It may look somewhat unbusiness-like to be cutting and carving about throughout the field, but that is of little importance when the utmost quickness is required. The heavier portion of the crop will require more care, more labour, and much more power. It will be found more safe and more sure, consistent with expedition, not to overload the machine in heavy work. The judgment of the workman will soon be convinced relative to the breadth of cut he must adopt in heavy work, and the depth and inclination of the knife-bar necessary to get under the laid places. It is better to take only half the breadth of the knife-bar than to take more and clog in the work. After all, the machine is but, in reality, a substitution of the scythe; consequently, as the mower with the scythe has to turn about and about again, to catch or take his work at the best advantage, so must the machine, in some measure, be worked. Sometimes it will be necessary to attack a laid place from the side of the layer, or, it may be, to meet the laid place right in front, so as to tear it up for the cut. It will not often occur that the reaper will clear up a closely-laid place from behind, or taking it in the line of draught as it lies; but all these differences and difficulties in the mode of working will be readily overcome by usage and good judgment in the workman. There are machines to be found that will accomplish the cutting of any crop, however heavy, closely laid, and badly "thorough-grown." Before commencing to cut any field, workmen with the common scythe should be sent in, to open ways for the horses. Most reaping machines are capable of making their own way, and setting out their own work, but it is at the expense or loss of the farmer. There is invariably a waste in the trampling of the horses and the passage of the machine, which manual labour with the scythe will save. Every machine should be provided with an extra knife and other requisites likely to be wanted in case of accident, so that no hindrance or provoking delays take place. There are also, in most fields, various spots or places in the crop, such as hollows, old ponds, filled-up ditches, and the like, which had much better be done with the scythe than spending time about them with the machine, if, indeed, the machine can get at such places at all. All these minor matters the farmer's judgment will direct, bearing in mind that no single implement or machine was ever invented or designed to effect every portion of the work for which it was intended. Many little aids of various kinds will from time to time suggest themselves in facilitating the work, which do not at first appear. Experience is as necessary here as elsewhere.

The best mode or disposition and management of the men conducting the work.—This I know from experience has become a very important part of the question, or of the conduct of the work. The machine is adapted to cut down a large breadth in a single day. If this is carried out in the wheat crop, it should all be tied and stooked at the time. Barley, oats, and beans will not take much hurt by lying awhile; but wheat should be cut dry, and if possible be kept so till stooked. In this operation many hands are required, and men generally will not act in unison long, unless they are pretty well matched. In following the machine for gathering and tying they soon learn to set out every man his work, and the less active or incapable soon cause obstructions in working the machine, so that all are greatly hindered. In the course of time these difficulties will vanish, but at present we are in the transition state from the *sickle*, *hook* and *scythe* to the *reaping machine*, and workmen are slow to fall in with the new order of things. At present a workman can take his whole family into the harvest-field, and make them useful and profitable in the various departments of harvest-work; but if he is to join "a gang" after the reaper, his family are for the most part deprived of their share of harvest work, which is a hardship. It, therefore, becomes a part of a great question—the labour question—which is becoming more and more difficult to deal with daily, and, therefore, in this transition state of harvest-work, it behoves every farmer to take the most generous and kindly view of the case, and, so far as he possibly can, to regulate the work and give such liberal wages as shall not only prevent hardship, but make the reaping by machine more easy and more popular than the old order of harvesting corn.

There are so many modes of conducting harvest-work. In some parts of the country it is customary to hire a sufficient number of men to complete the harvest; in others all the operations are done by piece-work; in others the cutting is by piece-work, and the leading by yearly servants and a few hired assistants for the harvest. This latter is the case in my own district; hence we have great difficulty in properly working our reaping machine. For the past two years we have used one with profit; but we have been compelled to resort to our yearly servants, to two or three hired labourers, and to several lads and young boys, and that only as we could procure them. The work, therefore, did not progress so satisfactorily as we desired. We offered liberal wages—nay, exorbitant wages; but that did not suffice to induce men to give up their usual family earnings, or rather their independence. I should observe that in this district labour at harvest time is always scarce, and for many years we have had to depend very much upon the Irish harvestman. Now, the increase of reaping machines has pretty nearly done away with their immigration, and we have to do without them. It appears to me that the best practice, for the efficient working of the reaping machine, is to hire, if possible, six, seven, or eight able men, in accordance with the power of the machine; to find them in relays of horses, and, in addition to wages, give them a further sum per acre, sufficient to induce them to every exertion and care, to expedite the work. Men do not long for the hard work of reaping or mowing except for the remuneration. If, then, a machine can do all the cutting, and they only are to do the binding, stooking, and raking, and for the like remuneration, much will be done toward reconciling them to ally themselves to the machine. It is the time when all labourers in husbandry look to make a little money for their rents and extras. It would be decidedly wrong to deprive them of this chance by machinery. Let the remuneration for this semi-engineering be ample and satisfying to them. It is sufficiently beneficial to the farmer to find that he is at all times master of his work, and, as respects the cutting his crops merely, almost independent of harvestmen altogether. I trust some of your readers will give us their experience and views.

THE ESSEX AGRICULTURAL ASSOCIATION.

MEETING AT EPPING.

The further we advance into the season the more obvious becomes the error of such Societies as have this year put themselves into fallow. A Meeting even without the cattle classes may not only be made to pay, but under judicious management rendered really popular, and it is satisfactory to see the Essex obstructives outvoted. There was scarcely a section of the show on Tuesday but that was well filled; while the entries extended to cart and riding horses, sheep, and pigs—to everything, in fact, but the bovine family. And, with all allowance for the exceptional circumstances under which the exhibition was held, the public appeared to be quite content with things as they found them; for the wide range of ground was not merely covered, but at times and in places almost inconveniently crowded with sight-seers, the small town of Epping being, indeed, hardly equal to the requirements of the occasion. In some matters of detail, moreover, there is still room for improvement, and one could not but long for the roomy standings and methodical arrangements which so distinguished the recent Suffolk gathering at Bury St. Edmunds. At Epping, on the contrary, there was no such perfection of purpose, some horses being honoured with boxes, and others hung on to posts and ropes, like a dealer's lot at a country fair. The agricultural horses got the best of this division of the spoil; while valuable hunters in the open class found no protection provided against the elements, which, however, behaved as handsomely as possible, the day being as warm, genial, and summerlike as the week or two that we have been so favoured with of late.

Although there were some honourable exceptions, the Epping cannot be called a strong show of horses for agricultural purposes; and it appears strange that at this, the ninth exhibition held by the Society, so many inferior animals should have been sent. No ring, moreover, was prepared in which to examine the draft horses, and the judges were required to make their awards at one corner of the show-field, where it was very difficult to find an even piece of gound to test their action upon. Five stallions competed for the first premium, and it really seems wrong that the Society should persevere in their close system with regard to prizes, viz., requiring all exhibitors to be owners or occupiers of land in the county. Why not follow the example of Norfolk and Suffolk, and let all the classes be open to all comers? Of the five horses shown, Mr. Thompson's four-year-old was far away the best; although he has not grown into so good a horse as he promised to be at two years old, when we met with him as a winner at Harwich and at Newcastle. He has beautiful colour and quality to recommend him; but he is rather small, and his feet are not so good as we should like to see on a four-year-old. His action, too, lacks freedom; but this may in some measure be attributed to the absurd way in which he was reined-up; for when his head was loosened by order of one of the judges, he appeared to move much better. Mr. Richardson's Captain again took the second prize, though but a common-looking useful horse for working-purposes; as it shows the weakness of the horse classes when such an animal wins a prize two years in succession. Young Farmer's Glory was a long-legged active animal, as was also General Lee; both of which would have been more at home attached to a plough, than in a show-field. The prize for the best two-year-old entire colt went to a very useful and good-looking horse by Crisp's May Duke; and the second to a small colt called "Young Champion," that the sooner he be added to the list of geldings the better it will be for the neighbourhood; and the other two competitors were very bad. The mares, four-year-old and upwards, were a better lot; Mr. Thompson winning with his very active mare, which we remember in the same honourable position at Harwich two years ago; while Mr. Thompson has another good mare; but she met with the same fate as at Bury, when under the inspection of a different V. S. Mr. Gingell took the second prize, with a good useful mare, that would, however, stand no chance in better company; Mr. J. Ward's Darby, hitherto a frequent winner, was objected to on account of her small feet and scrambling action, and unless great pains are taken with her feet—and no one is a better manager than her owner—we fear her career as a show animal is over. Side bones and thick hocks were very prevalent with some of the rough-legged ones; and a long-legged, short-rumped bay mare, being about the soundest of the remainder, was, we believe, the reserve number. The mares with foal at foot were indeed a sorry lot, Mr. Croxon's half-bred Suffolk, having more size, gave her the preference over Mr. Badham's Duchess, which, although full of quality, is too small for anything approaching strong land; and we would venture to recommend this gentleman to spare neither trouble nor expense to obtain a horse with substance for his Emperor mares. Mr. Bray's Blossom had bad shoulders; and, indeed, there was not a show animal in the class. Of the four 3-year old fillies entered, Mr. Badham's two only came to the post, and the judges, acting on the wholesome plan of awarding the prizes offered, even if there is no particular merit, placed the Bury second-prize filly first, and her half-sister second. Where is The Hero? Although he did beat Chester Emperor on two occasions, surely Mr. Badham might by this time forgive him, and from what we have seen of his stock, we believe that if he were used upon the Bulmer mares we should see a marked improvement in their legs and feet. A pair only of geldings contended for the £4 offered, the prize going to horses more fitted for London work than the Essex clays; but one of the judges "came from far off." If the Suffolk breeders stick to their old names of "Boxer," "Briton," "Dapper," "Moggy," and so on, Mr. Way has been a long way for a name for his beautiful coloured, but long-legged "Dagmar," which was about a foot too far from the ground, whilst the second prize went to Mr. Barnard's filly, that looks more like running in a light cart with butter and eggs than ploughing wheat and bean-land. Mr. Piggot took first for a very clever yearling entire colt by The Hero, which, if we remember rightly, gained a prize last year at Brentwood as a foal; and with care and no mishaps this young one may, indeed, some day be entitled to the name given him of "The President." The second prize went to a colt called "Young Drayman," and appropriately enough, as he is much more fitted to draw beer over the London stones than to plough barley-land. A plain-headed filly, but showing the colour and quality of her sire, The Hero, and bred by Sir Thomas Lennard—the absence of whose name from the catalogue as an exhibitor in the agricultural classes must be matter of regret to all well-wishers of the Association—took the first prize; her owner, Mr. Lambert, having the only other one shown in the class, about as unlike the chesnut as two animals could well be, but thereby securing both prizes! There were nine cart foals to select from, and we cannot go with the award made by the judges, as we much preferred the second prize foal of Mr. Sewell's to the big uneven animal of Mr. Croxon's, to whom the first was adjudged. Mr. Sewell's foal was a nice, level, true-made filly; whilst the other was as uneven. Messrs. Barlow and Barthropp had, however, once or twice outvoted their colleague Mr. Manning, and on this occasion they allowed him to have his own way, he taking up the argument that the animal that was worth most money in a fair or market should receive the prize; his colleagues, on the other hand, contending that it should go to the most perfect animal of its sort, which it certainly did not in this case. Mr. Badham's foal by Royal George was the reserve number, and a very neat little filly she was; but we cannot understand Mr. Sewell's modesty in not entering the dam of his foal as a mare with foal at foot; as if he had done so she ought most assuredly to have taken the first prize. Looking casually at the twelve pairs of "plough-horses or mares," they appeared a very useful lot, but on closer inspection various defects showed themselves, and they were reduced to four. Of these the pair of bays belonging to Mr. Arkwright were decidedly the best, being good, wide, active mares, with quality sufficient for any one. Mr. Christy showed a pair of "Emperor" mares, one of which was a *good* one, but her companion spoiled the pair; but they were highly commended, as were also Mr. Gingell's, and Mr. Barnard's pair receiving a simple commendation. The prize of £25, open to all England, for stallions, brought out the five shown for the first premium, with three fresh ones, including Mr. Wilson's handsome colt, the second prize at Bury. He could not, however, prevent Mr. Thompson's horse carrying off another honour; the young one being highly commended. The £10, open to all England, for two-year-old entire colts, brought out Mr. Cant's winner, Mr. Wilson's, Mr. Crisp's Bury prize-taker, and several others. The struggle, however, was soon reduced to a match between Mr. Crisp's and Mr. Wilson's representatives; but it was soon over, as Mr. Manning would not have the light-boned one from Baylham at any price.

The prize of £30, open to the world, brought together all the previous winners of the day, as well as three or four fresh candidates for the palm of victory. Here we expected to have seen the Harwich Emperor try his luck again; but it would appear that Mr. Rist thought discretion the better part of valour, and declined to carry out his threat of submitting his horse to an examination by Professor Simonds, although we hear the horse has, since his rejection at Bury, been pronounced sound by a well-known veterinary surgeon. England's Glory, from Huntingdonshire, was a rare good-shaped one, and just the sort to improve the Suffolks in some points, were it not for his colour and rough legs; his hocks, however, at once condemned him. As most of the others had been previously before the judges, they received their orders to return to their stalls, leaving the battle eventually to be fought by Mr. Thompson's horse, the winner of two prizes on the day, and Mr. Crisp's colt. The judges took exception to the legs of the latter, which, as we remarked at the Bury Show, are not at all of the form we like; but he has, nevertheless, large knees and hocks, with great muscular power, and is as big at two years old as Mr. Thompson's horse is at four. This, combined with a freedom of action not possessed by the other, placed him in the proud position of the winner of the champion prize, "open to all the world," although the decision was a very near thing. A similar prize of £10 was offered for the best cart mare, and this again brought out previous prize-takers of the day, with a celebrated winner from Suffolk, and some former winners of the Society's prizes, that were ineligible to compete again; but these prizes being special ones, offered by the town of Epping, all restrictions were removed. It was very soon apparent that the struggle lay between the winners of the Essex All-England prize, viz., Mr. Wolton's famous Moggy and Mr. Sewell's mare by Hercules; and two better mares it has not been our lot to see for a long time. The fine size, quality, and action of the latter prevailed over the more compact form of Mr. Wolton's mare, and the champion prize goes to Beaumont Hall; the judges, however, recommended that an extra prize should be given to Mr. Wolton, whose mare, though beaten, is far from being disgraced. She was, indeed, far the handsomer of the two, and by many the award was regarded as a mistake.

As at Bury, the riding-horses were more remarkable for numbers than merits, and Essex is certainly making no great advance in this way, despite the perseverance with which Sir Thomas Lennard is bringing home better blood to the people's own doors. There was no thorough-bred horse, however, sent this season from Belhus, Mainstone having now taken all the premiums he is qualified to compete for, and the county class was consequently represented by Mr. King's Knight Templar, that, according to the catalogue, "descends from the best blood in the world," and who otherwise has as many faults and as few redeeming qualities as almost any animal we ever saw on a show-ground. The judges refused to make any award over such a horse, although purchased a short time since at Newmarket for seven guineas by Captain White, formerly of the Essex and Suffolk hounds, to whom the credit is due of having introduced the Knight and the "best blood in the world" into the district. In the All-England class of thorough-bred sires the Ace of Clubs again righted himself, having been beaten for this premium at the last show of the Essex Society by Mainstone. But the Ace is improving daily, as he never looked so well as at Epping, and as a consequence Captain Barlow has been
tempted to name a price, and the handsome chesn
changes his quarters from the East to the far West do
in Devonshire. Mr. Crisp's big-boned powerful Corœb
colt was again a good second to the Ace, as at Bury; a
beyond these two All-England furnished nothing furth
than the Knight Templar, aforesaid. The entire hors
"not thorough-bred," and with no other condition to
class, were a very moderate and mixed lot, as Mr. Gog
first as indifferent a sample of the Phenomenon as e
traced his belongings back to Norfolk. The hunters ma
up a far more goodly show, though with very few among
these bred in the county; while the open prize went cle
out of it to Mr. Hall, of Ely, for a light, clever, bloc
like Irish horse, that took the local and higher premiu
at the Cambridgeshire Society's meeting in 1865, a
hence his name, "Double First." Mr. Hall had anoth
old worn grey of a good stamp, and Mr. Offin a wonder
weight-carrier that was first in the county class last ye
Professor Simonds disqualified Mr. Sexton's chesnut t
won at Bury, as being lame, though this was scarcely pe
ceptible; but the Messrs. Sexton's second horse in
Suffolk, the bay by Augur, was again about second he
being highly commended. In this, as well as in comp
tition for the honours confined to the county, Mr. Bark
of Ingatestone, Mr. Loftus Arkwright, the Master of t
Essex Hounds, Mr. Christy of Roxwell, and Mr. Robi
son of The Priory, had entered some business-like nag
one of the best-looking of Mr. Barker's, a bay, bei
either unnoticed by the judges or put out of it by t
veterinarian. Mr. Arkwright's old white-faced hors
went very like a workman, and the grand and loft
jumping was very fairly got through, though the hurdl
would have been all the better for a little "stuffing.
The hacks and "nags," something of a distinction wit
out a difference, ran on into an infinity of divisions an
sub-divisions, but with nothing very extraordinary to b
had by way of selection. Mr. Omega Perry's mare i
neat, useful, and active, nice qualifications certainl
for a hack; but Mr. White's chesnut gelding ha
very middling forelegs, fidgety action, and not muc
more to recommend him; but then the class was both
small and a bad one. The prize four-year-old nag is
fairish horse of some substance, and the second a ligh
long filly by The Don, with a sour head and heavy neck
as the three-year-olds were a yet more common lot, wit
Mr. Gurney's little filly by Mortimer fairly first—th
is, if a nag means a hack—and Mr. Bray's Arab cross, poo
and plain, a very moderate second. Another Mortim
of Mr. Arkwright's, that won amongst the two-year-old
is a still better specimen of this horse's get; but the pri
yearling, by Wetherden, was no credit to that true litt
horse; whereas amongst the hunting mares with foals
foot the produce must have had a deal of influence on t
decision. Mr. Hallam's famous deep old chesnut, that ha
become quite an institution on these occasions, was no
placed second for the only time in her history; he
superior being a Ratan mare with some fine points, bu
set-off by naturally bad forelegs and a pair of dreadfull
damaged knees. The foal, however, by High Treason i
a capital one, so clean and well-grown, and so fond o
showing himself off to the best advantage, that he put hi
mother quite into the shade, and the award must rea
rather as "the best foal with mare alongside." Sir Thoma
Lennard had a narrow thorough-bred mare here, that di
not look to have been doing well, while Mr. Jostling sent
as indifferent a specimen of a hunting mare as ever wa
known for such a purpose; and she should be put to Knight
Templar next season, if only in defiance of the people wh
set themselves up for judges! The ponies included some
very good little animals really fit for children's use, and
the premiums, so far as we could understand the returns,
were put together and equally divided between Mr.

Jason's mare—"a perfect boy's hunter" and another very pretty one, and more of a pony proper, of Mr. Johnson's. The donkey classes fell through, with only three entries for four prizes, and these open to all England!

The sheep and pigs, over which the same set of judges officiated, supplied two very good sections of the show, and in some instances with a marked improvement upon the progress previously observable. In the first-class of Southdown rams, Jonas Webb's blood came to the fore with a couple of good useful sheep bred and exhibited by Mr. Clayden, and over whose merits the judges and the owner agreed to differ, Mr. Clayden preferring the second—with a capital back certainly—to the other. It was, however, in the open class of Southdowns that the county distinguished itself, and where Lord Braybroke won with a shearling—also the best of his class—of really beautiful quality, and with one of the best backs ever touched, if a little too pricked in his ears and chubby about his head. Lord Sondes sent a large sheep from Norfolk, that did not prove so well to the hand, but that was otherwise famously got up, and the [illegible] flock will no doubt continue to run up to the [illegible] exhibited at Christmas. Their prize ewes here were very handsome and sizeable; as Lord Braybrooke's sheep small but pretty, and his Lordships pen of ewes also commendable, though their necks might have been better; while of the other shortwools it was suggested by one of the Judges that, for the credit of the county, the title of "the Suffolk Down" should be dropped as soon as possible. Mr. Chaplin indeed, who showed about the best samples of this sort, has already anticipated such a suggestion, his sheep being entered simply as "blackfaces." Mr. Giblin's Cotswolds and [illegible] appear to thrive in Essex, though neither variety equal to the natives fresh from the hills or shires; and Mr. Auston's "pure Lincolns, without a cross for [illegible] years," are such very odd-looking animals as to [illegible] one in assuming that the sooner they do have a [illegible] the better. Mr. Brown's long-woolled ram is the sheep that won at Bury, and a very good one he with great size, good wool and mutton, but rather [illegible] about his shoulders; as Mr. Sexton's rams were distinguished in Suffolk, though they will not bear [illegible] about like the Marham sheep. Mr. Sewell's old ewes, with lambs by one of the Norfolk long-[illegible] were a long way the best of their class; but the All England. entry was very moderate, and Mr. King Tombs might have sent better representatives of the Cotswold than those with which he won at Bury. The champion of the Oxfordshire Downs did credit to his belongings, as Mr. Wallis' old ram, commended at Plymouth and first about home, has improved since we last saw him, and is now a sheep of great substance; but the shearling stands badly, being altogether too stilty, though with a good back and wool.

Amongst the pigs the Messrs. Sexton maintained their [illegible] winning the All-England prizes with a black boar [illegible] white sow; and though their cultivation of the [illegible] pig is only of recent date, they ran clean away [illegible] Mr. Duckering's Lincolns, which we never saw to advantage. The Messrs. Howards' big pigs were quite out of show form, and in such condition should [illegible] have been sent so far afield. Then, again, Mr. Clayden's capital black boars are bred from Sexton, though the better of the two was only placed second to a middling Berkshire of Mr. Gibbins', who won more handsomely with his pen of three sow pigs, beautifully matched, and with all the best points of the Berkshires—size, coat, shoulders, and so forth. Mr. Griggs had some good Berkshires as well as Suffolks, his second-prize sow having been bred by Mr. Stearn; and Mr. Trim, of Epping, some really "useful" pigs, if they happen to be short of foxes in Essex, as they looked like going a great pace over a country. This, however, by way of contrast, as there were plenty of prize pigs at Epping, and of a better sort than they cling to in either Yorkshire or Lincolnshire, that is to say, unless mere size stands for every thing.

An extra admission-charge introduced us to a Poultry and Flower Show; but this extra is a mistake, so far as cocks and hens are concerned, which are, or should be, essentially farm produce. In another direction you came upon the Implements, where, without any stimulus in the way of premiums, a number of manufacturers and salesmen had standings which the catalogue arranges in this wise: Peene, of Rayne, Essex; Bradford, of Fleet-street; Picksley, Sims, and Co. (limited), Leigh, Lancashire; Rands, Ipswich; Samuelson, Banbury; Ashby and Jeffery, Stamford; Darby, Little Waltham; Ward and Silver, Melford; Mabbett and Pink, Romford; Smyth and Son, Peasenhall; Potter and Son, Aldham, Essex; Creasy, Bedfield; Coleman and Morton, Chelmsford; Cottis and Sons, Epping; Haywood and Tyler, Whitecross-street; Duffield, Regent's Park; Joslin and Sons, Colchester; Warren, Maldon; Wilkins, Ipswich; Woods and Cocksedge, Stowmarket; Garrett and Sons, Leiston; Aveling and Porter, Rochester; Catchpool and Thompson, Colchester; Ransomes and Sims, Ipswich; Burrell, Thetford; Simonds, Halstead; Priest and Woolnough, Kingston-on-Thames; Pertwee, Boreham; Eddington, Chelmsford; Robey and Co. (limited), Lincoln; Braggins, Banbury; Hitchurch, Bury St. Edmunds, Carter, Dunnett, and Beale, Holborn; and Dr. Wallace, of Colchester, with specimens of "Ailanthiculture"—or, in other words, of silkworms, eggs, cocoons, and silk. The Chairman, it will be seen, specially referred at the dinner to this Ailanthiculture—rather a difficult word, by-the-bye, to get over late in the day—but the really practical talk here was of no great moment, as many of the authorities had fairly run for it when their duties were over. Like Bob Sawyer's cheese, a very little of Epping seems to go a very long way, and the Essex Agricultural Association is strong enough to look out for better quarters.

PRIZE LIST.

HORSES FOR AGRICULTURAL PURPOSES.

JUDGES.—Capt. Barlow, Hasketon, Woodbridge.
Capt. Barthropp, Hacheston, Wickham Market.
J. Manning, Orlingbury, Wellingborough.

Stallion, having served not less than 20 mares in any part of the county.—£15, Wm. Thompson, jun., Thorpe (Garibaldi); £10, G. Richardson, Burnham (Captain).

Entire two-year-old Colt.—£10, G. H. Cant, Mile End, Colchester; 2nd prize, Wm. Bott, Broomfield (Young Champion).

Cart Mare, not under four years old.—£6, Wm. Thompson, jun.; £4, G. Gingell, High Laver Hall.

Mare with Foal at foot.—£10, H. Croxon, Burnham (Blossom); £5, G. D. Badham, Bulmer Tye (Duchess).

Three-year-old Filly.—£5, G. D. Badham; £3, G. D. Badham

Gelding.—£4, Wm. Cozens Kirkby, North Weald Hall. Highly commended: J. Stallibrass, Ongar Park Hall.

Two-year-old Filly.—£5, J. Way, Great Yeldam (Dagmar); £4, C. Barnard, Harlow Bury, Harlow.

Yearling Colt.—£5, J. S. Piggot, Beckingham Hall (The President); £3, R. Holden, Tolleshunt D'Arcy (Young Drayman).

Yearling Filly.—£5, T. W. Lambert, South Hall, Rainham; £3, T. W. Lambert.

Foal.—£5, H. Croxon, Burnham; £3, D. Sewell, Beaumont Hall.

Pair of Plough Horses or Mares regularly used on a farm. —£5, Lotus W. Arkwright, Harlow (Brown and Violet). Highly commended: J. Christy, Roxwell (Bessie and Jenny). Commended: C. Barnard, Harlow Bury, Harlow, and G. Gingell, High Laver Hall.

Entire Horse (open to all England).—£25, Wm. Thompson. jun. (Garibaldi). Commended: Wm. Wilson, Baylham Hall,

Entire two-year-old Colt (open to all England).—£10, T. Crisp, Butley Abbey (Conqueror). Highly commended: Wm. Wilson, and T. and S. Fyson, Warboys, Huntiagdou (Young England's Pride).

Cart Stallion (open to all the world).—£30, T. Crisp, Butley Abbey (Conqueror).

RIDING AND COACHING HORSES.

JUDGES.—Kersey Cooper, Euston, Thetford.
W. Hurrell, Newton, Cambridge.

Thorough-bred Entire Horse.—£15. No merit.

Entire Horse, not thorough-bred.—£10, J. Goggs, Baddow (Norfolk Phenomenon). Commended: F. Butcher, Colne Engaine (Morgan Lightfoot).

Weight-carrying Mare.—£5, F. Barker, Westlands, Ingatestone (Alice).

Hunting Gelding.—£5, Loftus W. Arkwright (Tudor). Highly commended: A. G. Robinson, The Priory, Dagnnm Park (Grey Plover), and J. Christy (Traverser).

Hackney Mare, not exceeding 15 hands.—£5, Omega Perry, Thornwood, Harlow; £3, J. H. Leecher, Boyle's Court Brentwood (Bella).

Hackney Gelding, not exceeding 15 hands.—£5, T. White, West Hatch, Chigwell.

Four-year-old Nag Mare or Gelding.—£5, J. Reeve, High Roothing Bury (Horatio); £3, J. Palmer, Stanford Rivers (Donegal).

Three-year-old Nag Mare or Gelding.—£5, J. Gurney Fry, Hale End, Woodford (Brunette); £3, J. Bray, Pyrgo Park, Romford (Colthurst).

Two-year-old Nag Mare or Gelding.—£3, Loftus W. Arkwright. Highly commended: C. Clayden, Manuden. Commended: Geo. F. Joslin, Berners Roothing (King Pippin).

Yearling Nag Mare or Gelding.—£3, Captain Sparrow, Gosfield.

Brood Mare, with Foal at foot.—£6, C. Dames, Chigwell (Chrysalis); £3, J. T. L. Hallum, Wormingford Grove. Highly commended: Sir Thomas Barrett-Lennard.

Pony—entire, mare, or gelding, under 14 hands.—(This premium was divided into two classes, large and small ponies.)—£4 for large, C. A. Murton, Buckhurst Hill, Woodford; £4 for small, W. Harrison, Claybury Park, Woodford Bridge. The class of small ponies generally commended.

Thorough-bred Entire Horse (open to all England)—£25, Captain Barlow, Hasketon (The Ace of Clubs). Commended: T. Crisp, Butley Abbey (The Abbot).

SHEEP.

JUDGES.—C. Howard, Biddenham, Beds.
E. Little, Chippenham, Wilts.
H. Woods, Merton, Thetford.

Southdown Ram.—£5, J. Clayden, Littlebury; £3, J. Clayden.

Ram of any other Short-woolled breed.—£5, P. Portway, Great Sampford (Suffolk Down). Second prize withheld for want of merit.

Cotswold Ram.—£5, J. Giblin, Little Bardfield; £3, J. Giblin.

Long-woolled Ram, of any age.—£5, E. Auston, Thorrington (Lincoln). Second prize withheld for want of merit.

Oxfordshire or Shropshire Down Ram.—£5, J. Giblin (Oxford Down); £3, J. Giblin (Oxford Down).

Shearling Southdown Ram.—£5, Lord Braybrooke; £3, Lord Braybrooke. Commended: Lord Braybrooke (for two other rams).

Shearling Short-woolled Ram, of any other breed.—£5, P. Portway (Suffolk Down). Second prize withheld.

Shearling Oxfordshire or Shropshire Down Ram.—£5, J. Archer, Saffron Walden (Oxford Down); £3, J. Giblin (Oxford Down).

Shearling Long-woolled Ram.—£5, J. Giblin (Cotswold); £3, J. Giblin (Cotswold).

Pen of 5 Shearling pure Down Ewes.—£6, Lord Braybrooke; £4, T. W. Bramston, Skreens.

Pen of 5 Shearling Short-woolled Ewes.—£5, J. R. Chaplin, Ridgewell (Blackfaced); £3, J. R. Chaplin.

Pen of 5 Shearling Long-woolled Ewes.—£5, J. Giblin (Cotswold); £3, D. Sewell.

Pen of 5 Ewes and Lambs.—£5, D. Sewell (Cotswold cross); £3, J. Archer (Oxford Downs). Commended: J. Stallibrass, Ongar (half-bred); G. Gingell, High Laver Hall (Southdown).

Pen of Fat Shearling Short-woolled Wethers.—£5, Lord Braybrooke; £3, Lord Braybrooke.

Pen of 5 Fat Shearling Cross-bred or Long-woolled Wethers.—£5, W. Cozens Kirkby (half-bred).

Long-woolled Ram, of a pure breed (open to all England).—£10, T. Brown, Marham Hall, Norfolk. Highly commended: G. M. Sexton, Wherstead Hall, Ipswich (for two rams, Cotswolds).

Short-woolled, of a pure breed (open to all England).—£10, Lord Braybrooke. Highly commended: Lord Sondes, Elmham Hall, Norfolk.

Pen of 5 Shearling Short-woolled Ewes (open to all England).—£10, Lord Sondes.

Pen of 5 Shearling Long-woolled Ewes (open to all England).—£10, J. K. Tombs, Langford, Gloucestershire (Cotswold).

Shropshire or Oxfordshire Down Ram (open to all England).—£10, G. Wallis, Old Shifford, Bampton (Oxford Down).

PIGS.

JUDGES.—As for Sheep.

Boar.—£5, J. Clayden; £3, J. S. Leacher, Boyles Court, Brentwood. Commended: G. Griggs, Romford (Berkshire); Wm. Thompson, jun.

Boar, not exceeding 12 months.—£5, J. Giblin (Berkshire); £3, J. Clayden.

Sow in Pig.—£5, G. Griggs (Berkshire); £3, G. Griggs (black Suffolk). Commended: R. Laxton, Epping.

Sow with her Pigs, the pigs not to exceed 12 weeks old.—£5, G. Griggs (Berkshire); £3, C. Benjafield, Passingford Bridge, Romford.

Pen of 3 Sow Pigs, under 9 months old.—£5, J. Giblin (Berkshire); £3, J. Clayden. Commended: G. Griggs.

Boar (open to all England).—£10, G. M. Sexton (black Suffolk). Highly commended: G. M. Sexton (black Suffolk); and G. M. Sexton (white Suffolk). Commended: R. E. Duckering, Northorpe, Lincoln (white).

Sow (open to all England).—£5, G. M. Sexton (white Suffolk). Highly commended: R. E. Duckering (white Sow and litter); G. M. Sexton (black Suffolk).

DONKEYS.

JUDGE.—W. P. Boghurst, Frating Abbey.

Male Donkey (open to all England).—2 gs., T. W. Bramston, Skreens, Chelmsford; £1, L. J. Sparrow, Great Baddow.

Mare Donkey (open to all England).—£1 10s., H. Foyster, Braintree.

EPPING TOWN PRIZES.

Hunting Mare or Gelding (open to all England).—£10, G. S. Hall, Market Place, Ely (Double First). Highly commended: J. Christy (Traverser); G. M. Sexton; J. Offin, Hutton, Brentwood (Baron).

Hackney Mare or Gelding (open to all England).—£10, J. Gurney Fry, Hale End, Woodford (Welsh cob, Taffy). Highly commended: J. S. Leecher (Merrylass). Commended: G. D. Badham (Major).

Cart Mare, not under 4 years (open to all England).—£10, D. Sewell; second prize, S. Wolton, The Hall, Newbourn, Suffolk (Moggy).

Cart Filly, under 4 years (open to all England).—£10, G. D. Badham.

EXTRA STOCK.

RIDING HORSES.

Commended: J. H. Smee, Theydon Place, Epping (pair of Norwegian Cobs); J. H. Smee (Norwegian Cob); W. H. Borham, Halstead, Essex (pair of cream-coloured Ponies).

SWINE.

Commended: G. M. Sexton (white boar).

VETERINARY INSPECTOR.—Professor Simonds.

THE DINNER,

of about 100, took place at the Town Hall; the president, Mr. Mr. J. W. Perry Watlington, occupying the chair; who in proposing "Success to the society which brings us here to-day," said: In this very exceptional year, which you all know has prohibited the possibility of exhibiting stock on account of the cattle plague, we have had in the aggregate a larger number of entries than we have ever had before, even in that exceptional year 1865, at Brentwood. The total number of entries this year has been 538, and that at Brentwood 530, and you will remember that there is not a single head of cattle shown to-day. It is obvious to remark in the paper which I hold before me that the only class in which there has been any falling off has been in that of the donkeys. Last year there were 13 shown, and this year there were only three. I don't know how far that tells in favour of Epping or against it. I take it that in an agricultural county and at an agricultural meeting it is quite unnecessary for me to insist upon the importance of attention to the breed of stock, neither is it necessary for me to dwell, in these days of competitive examinations, upon the importance of seeking to gain excellence through the means of competition. Now this society aims at this object, and seeks to accomplish it by this means; and therefore, I say, on both accounts it is entitled to your consideration and support. But it is not only on account of the direct operations of this society that I seek for your approval and ask for your good wishes, but there are other reasons also why I now require you to drink to its success. Not only does this society offer direct premiums on good stock, but it also holds out an inducement and gives a stimulus for the exercise of local exertions in order to produce exhibitions of fruit, flowers, and poultry, and by that means it very largely extends the great interest of the show, and also secures that for which, in all gallantry let me speak it, we so much desire—a large attendance of the fair sex. And besides that, it also gives opportunity of exhibiting extra stock, and of calling attention to any experiments which may be going on around as interesting to the agriculturist, as well as to the general observer. Here, for instance, at Epping we have had two reindeer broken to harness—very interesting, and doubtless useful to man. Then we have had an exhibition—I don't know if all gentlemen saw it, but all gentlemen ought to have seen it—an exhibition of what is called ailanthiculture, that is the growth of a plant which is to feed silkworms, and which may grow upon the sides of our railways. The silk which is produced by it is now used for the manufacture of a kind of cloth, and the gentleman who showed it to us (Dr. Wallace, of Colchester) has reason to hope that by the use of it our looms in England may rival the looms of France and of Asia. At any rate there was this exhibition, which was extremely interesting to those who had a fancy that way. Besides that, there was an interesting exhibition of grass grown simply by the application of sewage upon pure sand. That, I say, was a most interesting exhibition. It is only a short year since that Professor Liebig told us that was a perfect impossibility. Now we have seen that in a short space of time very good grass can be grown on simple sand, and that sewage from the great sewer of London thrown upon the Maplin Sands would cause grass to grow upon them. It shows that scientific men, like doctors, do not agree: one tells us one thing, and one another thing; so that they, like other men, are sometimes at fault. It holds out a great encouragement to that vast undertaking now in the course of construction, and which, if it does succeed, will be of great advantage to the low lands of this county, and a great delight to those who wish to see the Thames made pure by the transference of the London sewage to such places as I have stated.

Lord **Eustace Cecil**, M.P., in giving "Prosperity to Epping and the health of the Local Committee," said: There is one prize which I should very much like to see given, and that is a prize to any resident in the county, or to any exhibitor, who has cured most animals of the cattle plague. There is much of theory—much, I must say, of false theory—on the subject; but I think that any real, sound, practical experience, tending to mitigate or cure this dire pest, would be of the greatest value to the community. All sorts of remedies have been tried, from painting the cows' noses and hanging strings of onions round their necks, down to that most infallible cure—the pole-axe; but none of them reflected the slightest credit on the science we boast of, or the enlightened age in which we live. The worst of the matter is that the very people whom we must look to for help and advice in this matter, the Veterinary College, don't give us the smallest assistance. Now, I do not want to say one word in disparagement of what no doubt is a very honourable profession, for I am quite sure they have had great difficulties to contend with, and, at the same time, I think it but right to say of that profession that it has hardly had a fair trial. It will hardly be credited that in this kingdom there are only three veterinary colleges. One of them, as we all know, the Royal Veterinary College, has been instituted more than half a century in London; there is another which is in existence still, although its functions are almost in abeyance, in Edinburgh; and a third has been lately instituted somewhere at the West-end. Something like a hundred or a hundred-and-fifty gentlemen a year are turned out by these institutions, and I confess it seems to me that is hardly a sufficient number to take care of the great number of stock in the kingdom, amounting to something like five millions. No doubt this is a great evil, and one which demands all our attention, and should be remedied as soon as possible. There are cases in connexion with the cattle plague, in which we have had to go into the street, and take the first man we find, and make him inspector; and in a neighbouring county, which I have the honour of serving as a magistrate, on more than one occasion inspectors were appointed who were totally unfit for the duty; and in one instance a man, who was either a tailor or a cobbler, was appointed, and no doubt did his duty in a professional manner. I mention this to show how much the subject requires consideration, and I only hope it will be taken up generally by the agricultural societies of the kingdom. But let us look at it in another point of view. We have been told that there are something like five million head of cattle in the kingdom, and that out of these we have lost more than a quarter of a million, or something like one in twenty. In Essex the proportion was very much the same; for we had about 50,000, and have lost 2,500; or, to reduce it to a money value, supposing each head of cattle to be worth £10, which is not a very high figure, the amount altogether would be something like £25,000 or nearly double our ordinary county rate. When we take these facts and figures into consideration, we must feel how necessary it is that something more should be done for the encouragement of the veterinary art in this kingdom. The legislature have already taken a step in the right direction this session, and there is a Bill making it penal for any man to undertake the duties of a veterinary surgeon unless duly qualified. I hope the agricultural societies throughout the kingdom will back up the legislature in this matter; and if they do so, I am quite sure that before long every farmer will be able to take his stock to a really qualified authority, and to get useful advice at a very moderate charge.

The only judge present was Mr. **Boghurst**, who, in responding, said that he thought a good show of donkeys might yet be got up.

EGGS.—The imports of eggs this year have been on a larger scale than ever, having amounted in the five months ending May 31 to 196,955,760 as compared with 157,328,520 in the corresponding period of 1865, and 139,280,520 in the corresponding period of 1864. In 1856, the number of eggs imported was 117,230,600; so that in the first five months of this year the imports effected have already outstripped the receipts of the whole of 1856. Ever since 1855, the imports of eggs have been striding on, in fact, at railway speed. Thus in 1855 we paid for eggs £236,865; in 1856, £278,422; in 1857, £317,046; in 1858, £303,617; in 1859, £336,662; in 1860, £478,658; in 1861, £550,557; in 1862, £593,813; in 1863, £673,638; in 1864, £835,028; and in 1865, £928,247. Fancy our paying about £1,000,000 a-year for eggs!

FLAX AND LINSEED.—The imports of flax and linseed into the United Kingdom have very greatly increased during the last twelve years. In 1854 they amounted to 828,513 qrs., in 1855 to 796,951 qrs., in 1856 to 1,180,180 qrs., in 1857 to 1,051,113 qrs., in 1858 to 1,017,844 qrs., in 1859 to 1,270,911 qrs., in 1860 to 1,330,623 qrs., in 1861 to 1,160,270 qrs., in 1862 to 1,088,472 qrs., in 1863 to 1,104,578 qrs., in 1864 to 1,434,973 qrs., and in 1865 to 1,485,414 qrs. The value of the flax and linseed imported in 1854 was £2,545,107, in 1855 to £2,544,708, in 1856 to £3,195,634, in 1857 to £3,061,684, in 1858 to £2,710,078, in 1859 to £3,041,707, in 1860 to £3,391,938, in 1861 to £3,108,055, in 1862 to £3,210,869, in 1863 to £3,372,432, in 1864 to £3,947,221, and in 1865 to £3,983,243.

ON GRASS LANDS.

At a meeting of the Pembrokeshire Farmers' Club, Mr. BONAR said: The subject which I have chosen for your discussion to-day, is 'The best method of laying down grass lands, or permanent pasture, the kinds and quantities of seed required.' I have not chosen this subject to give you any information on it myself, as I know my talents to do so will fall far short in many respects, but simply because I consider it to be a subject of the utmost importance to most agriculturists, although it has as yet escaped our notice, to make ourselves better acquainted with the most modern system of laying down permanent pastures, with the kinds and quantities of seed most suitable for the different sorts of soils and situations which may present themselves in the course of our practice. We have discussed the growth and manuring of both white and green crops, and likewise the manuring of grass land, but this appears to me to be of more importance than any other agricultural question. For this reason:—We may have a failure in our crop of oats or barley by grub or wireworm or any other local cause, or we may experience a poor return of wheat, or the fly may take our turnips, or the disease, destroy our potatoes. To have any of these crops a failure would be, of course, a great loss to the farmer; but still, it is but one year's loss: another crop next year might redeem his loss. But should we, through carelessness in cultivation or manuring, or, what is quite as important, should we err in the selection of sound seeds, properly suited to our soils, and thus lose a crop of grass, it is not only one year's loss, but a loss of many years to come. With these facts before us, it behoves us to turn our attention more particularly to the cultivation and laying down of our permanent pasture or grass land, knowing, as we all do, that the county of Pembroke is well adapted for the growth of grass, and that the grass lands in this county is the chief object of the farmer's pursuits. It is then no mean object for us to make ourselves better acquainted with the most approved method of laying down this, the largest portion of land we now occupy, to the best advantage. I don't mean to say in this case that the more cost the more honour; but, from my own experience, I have found that the most expensive system, when conducted with strict economy, is the most profitable in the end. A very respectable farmer in my neighbourhood told me, when discussing the different systems of farming and cropping, that the old system was the best that ever was, or would be. This may be so in the opinion of some, I have no doubt; but I take a different view of it, and in this case a more wide and practical view, as the old system of laying down grass lands, or, rather, if I may use the expression, running the land down to grass, is to go on with white crop after white crop in succession until the land is completely exhausted, and then nature is left to provide the crop of grass. Now, what is the result? Is it a crop of luxuriant, healthy, permanent pasture? No, it is only a mass of coarse herbage, with neither nourishment nor feeding properties in it. I will not say it is not permanent, or else I shall be going astray; it is too permanent, and that we shall find when we go to break it up again. It would take a good deal of time, trouble, and expense to extirpate such a mass, and in doing so we make the land so light that in a dry season we shall run a great risk in losing our next crop. There are many of my neighbouring farmers who would, at this season of the year, be very reluctant to change a stubble field with me, as they say they have got plenty of grass in them for their cattle, while mine would starve a jackass or a nanny-goat. But this only shows the two different systems of farming, and I shall leave every one to adopt the one that pays him best. But my first object is to clean the land (which I consider the best principle of farming); and everything I do not sow, I consider to be a weed; and I think there is no other way of doing that properly without a fallow or a green crop. We may, in some seasons, under very favourable circumstances, be able to clean our stubble-fields in some measure for another white crop, and may cart or burn no end of couch from it; but in a wet season we too often find it a failure. Although I consider myself no authority, yet I will give you my experience, and the manner in which I conduct this branch of husbandry, and leave the meeting to judge for themselves. I am a great advocate for deep ploughing, and more especially for stubble lands before green crops. This I do in the autumn and the early part of winter, instead of allowing my stock to make the land into mortar; and I invariably find that when this is done, and the surface completely buried, that a great portion of the weeds disappear before spring; and as I make it a rule not to grow two white crops in succession, it is seldom that I have any trouble of cleaning in spring, further than one ploughing and harrowing. If anything more is wanted, as the land has been properly stirred to its depth, I consider the grubber or scarifier to be a more efficient implement than any other, more especially in a dry spring, as there is often an error committed in exposing the soil too much to the elements. The turnip crop will then be put down, and kept clean during the summer, in the ordinary way. We must not allow the spring to be too far advanced before ploughing, as the effect of the atmosphere will go further in pulverising the soil than Cambridge's roller. It is absolutely necessary that we should have our land converted into a firm mould or seed-bed before sowing the grass seeds; and if that cannot be obtained after harrowing-in the barley, we ought to roll before sowing the gross-seeds, then cover them slightly, and then roll again. There are many different opinions as to the best depth of cover at which certain grasses and clovers should be sown, but my opinion and experience is that the slighter the covering the better. There is a work published by Lawson, the seedsman, on the cultivated grasses, which I would highly recommend to all who are connected with farming. It not only gives a full description of the various natural and artificial grasses, but embraces all that is useful and interesting regarding their nature and habit, the particular soils for which they are adapted, and the peculiar circumstances under which their culture is necessary or desirable. I shall have occasion to make further reference to this; but, for the present, I might subjoin a table published in this work, to prove the best depth at which certain grasses and clover should be sown, from one-fourth of an inch up to three inches. It is here shown that the greatest quantity of seeds germinate at one-quarter of an inch. This is one fact worth knowing, among the many others it contains. It likewise shows us that we must have a fine mould or seed-bed. I would recommend the seed barrow, now in use, for sowing the seed, and more especially the clover, as by using it we not only save a quantity of seed per acre, but distribute them more equally on the surface than can be done by hand. But, before taking leave of this part of the subject, we must not overlook the use of lime. For my own part, I consider it to be one of the first and most essential manures applicable at this stage, as it has that powerful effect of acting upon all inert and irony substances, which abound in some soils, and which prove detrimental to healthy vegetation, and it dissolves all vegetable matters, and renders them available in the shape of easily assimilated food for plants. I shall now come to that part of the subject—the seed, the kinds and quantities required for laying down grass lands, either for alternate husbandry or permanent pasture. To give the whole series of tables contained in the valuable work before mentioned, comprehending all the variations of soils, altitudes, climates, and other circumstances which might present themselves in the course of practice, would be inexpedient, and almost impossible, and would far exceed the limits of a common lecture on agricultural pursuits. But I shall here class them in three divisions, viz., grasses for light soil, for medium soil, and for heavy soil. The wet light soils, with respect to the grasses suited to them, may be considered as approximating to the heavy soils, and a dry and heavy soil as approaching towards the light soils. The light embraces soils more or less of a sandy or gravelly nature; the heavy include clay and heavy loams; while the medium are to be regarded as an intermediate class, between these two extremes. The seed suited to them would be in these proportions:—

For Alternate Husbandry.

Names of Grasses.	Light and medium soils.			Heavy soils.		
	For one year's hay.	One years' hay and one year's pasture.	One year's hay and two years' pasture.	For one year's hay.	One year's hay and one year's pasture.	One year's hay and two years' pasture.
	lb.	lb.	lb.	lb.	lb.	lb.
Rough cocksfoot	—	2	2	—	2	2
Italian rye grass	9	9	9	9	9	9
Perennial rye grass	15	15	15	15	15	15
Yellow clover, or trefoil	—	1	1	1	2	2
Timothy, or catstail	1	2	2	1	2	2
Hybrid, or alsike clover	1	2	2	1	2	2
Common red clover	8	4	4	8	4	4
Cow grass	—	2	4	—	2	4
White, or Dutch clover	2	4	4	2	4	4
Extracted from a seedsman's priced list						

For Permanent Pasture.

Names of Grasses.	Light soils.		Medium soils.		Heavy soils.	
	With a crop.	Without a crop.	With a crop.	Without a crop.	With a crop.	Without a crop.
	lb.	lb.	lb.	lb.	lb.	lb.
Meadow foxtail	1¼	1½	1½	2	2	2½
Sweet scented vernal	0½	0½	0½	0½	0½	0½
Rough cocksfoot	3½	4	4	5	4	5
Hard fescue	2	2	2	2½	2	2½
Tall meadow fescue	—	—	2	2	2½	2½
Various-leaved hard fescue	—	—	2	2	2	2
Meadow fescue	2	2	3	3½	3½	4
Red, or creeping fescue	2	2	—	—	—	—
Italian rye grass	6	7	7	8	8	9
Perennial rye grass	8	9	9	10	9	10
Timothy, or catstail	1½	2	2	2½	2½	3
Wood meadow grass	1	1	1	1¼	1¼	1½
Evergreen meadow grass	1	1	1	1¼	1¼	1½
Smooth-stalked meadow grass	1	1	—	—	—	—
Rough-stalked meadow grass	—		2	2½	2½	3
Yellowish oat grass	1	1	1	1	—	—
Common birdsfoot trefoil	0½	0½	0½	0½	—	—
Greater birdsfoot trefoil	—	—	0½	0½	0½	0½
Common yellow clover	1	1	1	1	1¼	1¼
Hybrid, or alsike clover	1½	2	1½	2	2½	2½
Common red clover	1	1	1	1¼	1½	1½
Cow grass	2	2½	3	3½	3½	3½
White, or Dutch clover	4	4	4	5	5	6

The quantities set down are for an imperial acre.

Although some of these grasses are not sufficiently known in our neighbourhood, nor I believe sown to any extent, yet I have given them a fair trial for the last five years, and I find them to answer me well, and also the table as a guide for sowing. Judgment and discernment must, however, in many instances be exercised, both in regard to the kinds and to the quantities of seeds to be sown. Thus it may be expedient in similar cases to withdraw wholly or partly certain kinds of seeds, and to substitute others, especially where lands are known naturally to produce any particular sort, which, although desirable to a certain extent, may, when too predominant, prove rather detrimental to the crop than otherwise. It is also very material to keep in view the attitude, exposure, and any other peculiarities which may present themselves in the constitution of the land; as whether the soil or subsoil be naturally wet or dry, and whether it be of a calcareous, ferruginous, peaty, or other nature, at all likely to effect the growth of certain species or varieties of the grasses, clovers, and other points recommended in the tables. But in this work we should find the qualities, the soils, and situations for which they are adapted. We have now come to the last point, but although last not the least—that is the quality of the seeds. We have cultivated and manured our land, and we have selected the seeds we think best suited to the nature and quality of our soils and situations. This is one point which the majority of our farmers pay but very little attention to; but withal it is the most important in my opinion. What will it avail us, after the expense of ploughing, manuring, sowing, seeding, and every other expense, if our seeds should turn out to be a failure? I do not say that such has been the case in many instances that have come under my notice, but I do say that in many cases I have observed them the next thing to a failure, and in some cases I should say worse than a failure, as they fill our fields with a host of invaders or usurpers which we had never bargained for. Professor Buckman tells us that an examination of 30 samples of ryegrass and clover shows that as many as 800,000 or 900,000 weed seeds are often found to be sown with a bushel of the crop seed. This is a fearful array of figures, explaining perfectly how it is that clover and grass are very greatly injured by weeds, and may be taken as evidence that the farmer sows the most part of his weed pests; they come with his seeds of various kinds; and in the case of the clover crop, each seed sown subtracts from the sum of the clover seed. But this is not all, as very many of the weeds grow so fast as to smother and kill, or at least so much weaken, that winter kills many of the clovers in the vicinity of the weeds. Many weeds, too, seed the first year, and are succeeded in the next by an immense increase. These circumstances in a great measure would account for much of the so-called clover sickness of the soil. It is then a matter of the first importance to have our seed from houses of known repute, as it is a common practice with unscrupulous seedsmen to mix old and dead seed with good. The book I have referred to tells us that turnip seed of one year old will only germinate about 50 per cent., two years old about 30 per cent., four years old 15 per cent., eight years old 5 per cent. Others of course will be the same, so that we ought to be cautious, and when we purchase have our seeds separate, and as a trial sow a few of each in a flower-pot to prove them, and see how many will germinate, as there is so much spurious trash offered for sale that it would be better for us in some instances to pay the seedsman to keep them at home. We not only lose the crop we expect of them, but get one which will give us trouble to get rid of. For my own part I find it cheapest to have the best articles at the highest price, and do from experience recommend it to others. I don't mean to say that our seedsmen are to be much blamed in this case, as they must keep goods equal to the demand; no, it is those who are so penny-wise and pound foolish as to have a cheap article and a cheap article only—and a large portion of our farmers are so; they are so pleased with getting an article a few pence cheaper than another would have cost, that they forget the necessary drawback which is in the inferiority of the article, and altogether forget this fact, that what costs less will be worth less. This system is likewise too much followed by them with regard to their implements, as they generally give the preference to a low-priced article. But such cheap implements are a continual source of waste and vexation, which I have too often proved. My way is, let me have the best materials, and make your price accordingly, as without proper implements we can never cultivate our land to any advantage. The cultivating, manuring, seeding, &c., of too great a portion of our grass land is hardly an apology for it, and of such a system I have often said that it was neither done not left alone. During my stay in Wales I have been more struck at this than with anything, to see how little attention is paid to this branch of husbandry. Having come to this stage, the old-school farmer will then rest on his oars apparently composed and contented. and say, "Now I have done my part, and I shall wait for Providence to do His"—that is, provide him with a crop of grass, But some of the more modern farmers will venture to leave prejudice and the old system so far behind as to ask the assistance of some local country seedsmen, and it may be to try half a dozen pounds of red clover, two or three pounds of white, and perhaps a couple of pounds of trefoil, and perhaps ten pounds of cocksfoot and ryegrass: this they would consider an excellent mixture, and sufficient for one acre; and if the price is low enough they forget to ask or think whether such seeds are perennial, sub-perennial, biennial, or annual, or at all likely to suit the sort of soil and situation for which they are intended. In conclusion, I would say to such that they are farming under a disadvantage, as the expense of ploughing, sowing, harrowing, &c., rent, tithe, and taxes are the same whether the crop be good or bad. It is then clear that if we, by judicious management, could augment our crops, we should be gainers in proportion to the extra value of the crop; and the good crop checks the growth of weeds, so that the expense of cleaning land that bears good crops is less than if it bore bad. Mr. Cliffe says that the community have a moral right that the soil be farmed advantageously. Why, John Bull having but a small estate for the maintenance of his numerous family, which is crowded in the ratio of 223 to the square mile, it is his duty to provide for his own, and apply all his powers to rendering this little property as productive as possible; for has it not been said that he that provideth not for his own and his own house is worse than an infidel? I have very imperfectly brought this valuable subject before you, and am only sorry that it should not have fallen to better hands. I hope that I have given no offence to any one by the hints I have thrown out, as I intended nothing of the kind, but merely for the sake of comparison. And I hope, as Mr. Harford once remarked, that we will all go home thinking, and not only that, but commence doing also, and that we will with perseverance and judicious arrangement, soon raise Pembrokeshire to such an agricultural eminence as will be an example to all around us. I shall now leave this subject to be further discussed by abler hands, apologising for the time I have occupied, and begging leave to thank you for your attention.

The Chairman: Will you have the goodness, Mr. Bonar, to tell me what the seeds will cost per acre in the quantities which you say are necessary to produce this result?

Mr. Bonar: It is according to the prices of the year.

The Chairman: Well, we will take the prices of this year.

Mr. Bonar: Will you, in the first place, Mr. Chairman, tell me the description of the soil?

The Chairman: We will consider the three soils—light, medium, and heavy.

Mr. Bonar: Well, for light soils the cost will be £1 10s. 6d. per acre; for medium soils, £1 13s. 6d.; for heavy soils, £2 3s. 6d.: but the tables that are recommended in the book are not given as a standard that should not be departed from. As practical farmers we are to make variations, suggested by our experience of the qualities of our soil, subsoil, and other circumstances. We are to deduct from or add to these grasses recommended, and make such alterations in the proportions as we may find by our experience to be better adapted to the qualities of the soil we till. But as a guide for general practice these tables are very useful, and so are the entire contents of the book: in it we have all the plants described, with ample information respecting their nature and habits of growth, so that we cannot make a mistake in selecting the seeds best suited for the land.

The Chairman: I am exceedingly obliged for your information; and I believe myself that you are quite correct.

Mr. Bonar: The quantities are all given, but we may find that our land is productive of some of the natural grasses, and a portion of the quantity given may, in that case, be withdrawn.

The Chairman: It appears to me that you are quite right: more of one and less of the other comes to the same thing.

Mr. Bonar: It may be deemed advisable to reduce the quantities in some instances, and to use much less. If you had a field of twenty acres, you may order sufficient for sixteen, which would be ample for a field of that extent.

The Chairman: I perfectly agree with you on that point; you may vary them as you please, and it will come to much the same thing in the end. You have given us much information on the subject, and I now want to know what is the value of lime at per load?

A Member: Nine shillings.

The Chairman: It is a shilling a ton a mile; I know that, for I am an old practitioner myself. And how many loads per acre would you put down for lime?

Mr. Bonar: I have no particular quantity: the same rule holds good with regard to the quantity of lime as the seeds—the nature of the soil must be considered.

The Chairman: I know that must be considered.

Mr. Bonar: I believe that quantities varying from six to ten loads per acre is given to heavy land, but I should observe that I do not give my land that quantity.

The Chairman: How many loads do you use?

Mr. Bonar: Four per acre.

The Chairman: Now we are getting to the marrow: I use seven loads myself.

Mr. Griffiths (of Poyntzcastle): There should be eight loads.

Mr. Jenkins: You, Mr. Griffiths, are so fortunate as to live near the lime-kiln.

Mr. C. Carrow: May I ask you one question, Mr. Bonar? What is the cost of the seeds in the alternate system?

Mr. Bonar: For one year's hay, 16s.; for one year's hay and one year's pasture, 21s. 6d.; for one year's hay and two years' pasture, 23s. 6d.

Mr. C. Carrow: Whose tables are those?

Mr. Bonar: Mr. Lawson, the seedsman's.

Mr. C. Carrow: Are they for general use, or adapted to suit particular localities?

Mr. Bonar: They may be obtained by anyone who may send for them.

Mr. Carrow; This county is well adapted for the growth of grasses; and a less quantity of seed is required than in other places. Your system is, I think, very nearly the same as my own.

The meeting shortly afterwards broke up.

THE RINDERPEST IN SHEEP.

Mr. H. Woods, of Merton, has addressed the following letter to the chairman of the Norfolk Cattle Plague Committee:—

"Sir,—In consequence of its having been stated at the meeting of the committee last Saturday that Mr. Wellingham's sheep have been under my treatment, I beg you will allow me to give the particulars of the case. At the request of Mr. Wellingham I sent a person to Walton on the 24th of May to give his ewes a dose of medicine, and this was done because they appeared unhealthy; and several had died (48 had been lost between Michaelmas and 24th of May, and 20 at least from the disease with which they were then affected). I saw the ewes on Monday the 28th of May, and then learnt that the disease first showed itself in March, and that a month previous to my seeing them the whole flock had been purged a great deal. I saw that much time had been lost, for there was then great constipation of the bowels, sore mouth, and a thick slimy discharge from the nose, in many cases streaked with blood, and a watery discharge from the eyes, the whole flock appearing to be more or less affected. I advised that a second dose of medicine, rather stronger than the first, should be given immediately; and this was done on Tuesday, May the 29th. I also recommended that the sheep should not have so much succulent food, but, instead, some bran, crushed oats, and good hay chaff, which had answered so well in other cases. The bran and oats were given, but unfortunately Mr. Wellingham had no hay, and therefore none was given. Although several of the diseased sheep kept dying, still there appeared an improvement in the bulk of them; for on the 1st of June I saw them again, and found that the discharge from the nose and eyes had almost disappeared, and on the following day Mr. Wellingham wrote to me as follows:—'I am glad to say I like the appearance of my sheep to-day very much more than I have done; there are no more dead, nor yet fresh cases with the ewes; two lambs have broken out with the scurvy, but I think only one will die. I am in hopes they will now make a beginning in doing better.' Mr. Wellingham named the lambs because he was away from home when I went, and I had left a message with his shepherd, that unless he treated them also, he would soon lose a great number, as I could see they were falling down with the fever. On the 8th of June Mr. Wellingham sent me word that he purposed sending his ewes to marsh; and in my answer to him on the following day I said, 'I look with great alarm on the mere thought of your contemplating sending your ewes to marsh, where I understand they can get what water they wish for. I strongly advise you not to think of it for a moment, for the chances are it might kill half your sheep. I hear you have put three ewes where they can get water, as a trial to see if it will hurt them. Now, if these three sheep were to escape, I should not think it sufficient to warrant the risk of putting all your flock to a similar trial, when probably many among them may be in a feverish state, and would suffer from it.' Notwithstanding the number of deaths given below, the bulk of the ewes were improving; and on the 12th of June Mr. Wellingham wrote as follows:—'I have sent my shepherd over this morning. The ewes I consider much better, and I think the fever has almost left them. I should like, if you think it advisable, to give all my lambs a dose of your mixture to-morrow morning, as they are very sadly and not doing well, being full of the fever.' The shepherd said he considered the ewes were quite well, with the exception of one or two a little sickly, but past all danger. When I went on the following day, June the 13th, I was sorry to see the ewes had been on a common, full of rank-grown grass, and where they could get as much water as they wished for; and I learned that part of the flock was to be sent to the marsh at Wootton the next day. The ewes, however, with the exception of three looking rather dull and scouring a little, appeared perfectly well, and I thought a cure was effected. Mr. Wellingham and his shepherd believed that the sheep were so far recovered that they would not suffer from getting to water, and from eating the grass they were feeding upon, or from being sent to marsh. The result, however, proved otherwise; for on June the 20th Mr. Wellingham wrote as follows:—'My flock of ewes are dying by wholesale, from some cause I cannot account for.' The following figures from Mr. Wellingham's book will best show whether the doubts I had of the propriety of the ewes being put on these lands and allowed to water were reasonable or not. In 20 days, from the 25th of May to the 14th of June, 30 ewes died; in 11 days, from the 15th to the 25th of June, 62 ewes died; in 9 days, from the 26th of June to the 4th of July, 36 died. So that it appears that after the sheep were put on the common and sent to marsh, the disease returned with great virulence, and in 20 days, from the 15th of June to the 4th of July, 98 ewes died, whereas during 20 days ending the 14th of June, only 30 ewes had died. I wish it to be understood that when sheep are healthy, I believe it to be judicious to allow them as much water as they wish for; but when they are in a feverish state, I have always found it most injurious to do so. When I saw the lambs on the morning of the 13th of June, I was much struck with their altered appearance since I had seen them on the 1st, and found that 31 had died, and many more appeared past recovery; I told Mr. Wellingham I was fearful his loss must yet be considerable, as the disease had got so much hold of them. They appeared so bad that a very experienced shepherd said from six to seven score would die. They were affected in a similar way to the ewes, with the exception that numerous tape-worms were passed with the slimy evacuations. All the lambs, except one nearly dead, had a dose of medicine, which acted freely on the bowels. I gave directions for the feeding, and saw them again on the 21st of June, when I found them much improved, although the shepherd told me there were nineteen fresh cases of purging that morning; but when I looked at the lambs, I found it had been produced by their having been fed for three days on a rank-grown layer, which had been fed with sheep all the spring. I had requested that they should not be put on this layer. They were now kept from it, and on the following morning there were only four fresh cases of purging, and the next morning only two. From the 13th of June, the day they had the medicine, to the 4th of July, 43 lambs died, of which 14 at least, Mr. Wellingham said, were past all chance of recovery. I saw the lambs yesterday, in company with one of your Committee, Mr. Thomas Barton, of Threxton, and found them, with a few exceptions, looking as well as could be desired.

"Henry Woods."

Mr. C. S. Read, M.P., asked Mr. Woods, who was present, whether that communication described the whole treatment of the sheep.

Mr. Woods said it described the treatment with the exception of the sheep having been bled about the 5th of June. Perhaps the committee would allow him to explain why that was done. He was considerably pressed by many persons, who were in favour of bleeding, to allow these sheep to be bled. He resisted the wish very much indeed, for he never allowed a sheep to be bled except in extreme cases, as he believed it to be injurious; but when such strong opinions were expressed by men of great practical experience, he felt he was incurring too great a responsibility by adhering too closely to his own opinion, and therefore sent a man early in the morning of the 5th of June to Mr. Wellingham, with instructions to see him before he went to Lynn market, and to bleed the sheep if he (Mr. Wellingham) thought it desirable to do so. By ten o'clock that same morning, however, he (Mr. Woods) felt that he had yielded too readily to the opinion of those persons who thought it would do good, and sent off a messenger with instructions to the first man, that if he had not yet seen Mr. Wellingham, he was to tell him on seeing him that Mr. Woods objected to the bleeding. The man had, however, already seen Mr. Wellingham, who remarked that he had determined on their being bled, and wished it to be done. Accordingly, when the second man had arrived, the animals had already been bled. He (Mr. Woods) thought the bleeding had done very little good or harm, because on the 12th Mr. Wellingham wrote that he believed the sheep to be much better, and that the fever had left them; and, moreover, the shepherd stated that they were quite well. That was all the treatment that he knew of his knowledge they had received.

Mr. Read asked whether, generally speaking, Mr. Woods would advise bleeding.

Mr. Woods: Certainly not. I strongly advise that it should not be done as a general rule.

THE MORTALITY AMONGST LAMBS.

In the midland counties, and especially about Birmingham, Gloucester, and Stratford-on-Avon, hundreds of lambs have for several weeks been falling off in condition. Their wool becomes dry, harsh, and standing on end; the best of fare appears of little benefit to them; their appetite fails; the strength and condition rapidly sink; the little creatures scour and strain; their bowels are alternately unduly constipated and unduly relaxed; and, within three weeks or a month from the symptoms of ailment being first noticed, they are reduced to miserable skeletons, and die from sheer exhaustion. In the localities indicated we have this week seen hundreds of lambs suffering in this way. Many scores of promising lambs, that a fortnight ago were worth 30s. each, are not now worth 5s.; and a large proportion, probably two-thirds of those affected, unless promptly and skilfully treated, perish miserably. In most of the sheep-breeding districts of England, cases of this description occur from time to time, and are annually becoming more frequent and serious.

But the complaint, although so prevalent, is not very generally understood. Such a train of mortal symptoms must obviously proceed from some definite cause, and the straining and diarrhœa induce us to look for the presence of some irritant matters in the bowels. An examination of the dung will disclose further particulars. It is voided more frequently than usual, it is usually light-coloured, and contains particles of imperfectly-digested food; but, besides these more ordinary appearances, there may be noticed amongst it fragments of tapeworms, which are sometimes very minute, are often several inches long, and occasionally are found hanging from the rectum, and have been drawn out to the length of four or five feet. Where the pasture is not very long, on the barer spots where the lambs gather, or on any road which intersects the field, and on which sheep are so fond of lying, and depositing their droppings, these segments of the tapeworms may be plentifully found. It is difficult to estimate the immense quantity of fragments thus discharged from the lambs affected, and any calculation made from the portions which may be found, would probably fall far short of the quantities actually discharged; for the fragments are promptly picked up by rooks, thrushes, and other birds, who appear to enjoy their feast, and hop about the fields tenanted by the ailing lambs, eagerly devouring their prey. Greedily swallowing these segments, and doubtless with them the ova of the tapeworm, the unfortunate birds must in due course themselves become sufferers. From some such causes, there was a few years ago a great mortality amongst the grouse on several of our Highland moors.

It is not easy to explain the yearly increasing prevalence of tapeworm amongst young sheep. It has been supposed to result from the larger number of shepherds' and other dogs kept. Dogs, it is well known, are frequent sufferers from tapeworm: they discharge on the pastures segments and ova, which are swallowed by the sheep, come to maturity in the intestines, and produce the serious symptoms above detailed. But the sheep, as well as the dogs, doubtless disseminate the pest, which, as might be expected, always abounds where the grazings are heavily stocked. The ova, such as are now being dropped on the pasturages, are believed by Von Siebold and other competent authorities to possess wonderful vitality; and even after being exposed for months, they will, when swallowed, pass through the several phases, and reach the condition of tapeworms. Amongst the many curious circumstances connected with the tapeworm pest in sheep is its proneness to attack lambs several months old. At present, amongst the affected flocks they are the chief—indeed, almost the only sufferers. Their more delicate intestinal structures may, perhaps, form a more fitting nidus for the operations of the parasite. To some of the interesting speculations regarding the generation and development of these curious creatures, we purpose returning at an early opportunity. Meanwhile farmers, and especially those whose lambs are dying from the attacks of the parasite, will anxiously look to the practical question, and inquire, How can such cases be successfully treated?

The first matter must obviously be the destruction or expulsion of the tapeworms. In dogs, or even in the human subject, this is seldom very difficult. The extract of the male shield fern, the powder of the areca or betel nut, powdered kousse and lemon-juice, infusions of gentian and other bitters, are prescribed in human medicine, with more or less success. In dogs, the powdered areca nut is probably the most effectual remedy. But these and other such remedies appear to have little effect on the voluminous digestive organs of ruminants, packed tolerably full, as they generally are, with bulky vegetable food. A most accomplished and observant agriculturist, who has at present two hundred lambs dwindling from the tapeworm, has, for ten days, been giving them frequent doses of areca nut and male shield fern. A drachm of the areca nut, united with an ounce of the powdered fern root, repeated several times a-week, has produced little, if any, effect in removing the worms, whilst little more than half that dose sufficed to bring copious discharges of worms from the shepherds' dogs. Several patent nostrums, worm powders, and drenches have been also tried, with the like indifferent results.

For lambs we believe that the most reliable remedy is turpentine, which retains its pungent poisonous action on the worms even in spite of the bulky vegetable food which it meets with in the stomachs. With the turpentine it will be desirable to associate some bitter substance like gentian, which is best given here in the state of a strong infusion. Besides proving unsavoury for the parasites, and thus inducing them to relinquish their hold on the intestinal walls, the gentian moreover helps to impart tone to the debilitated digestive organs. For the same objects a little nitric acid or sulphate of iron may also be added to the mixture. Another ingredient of the dose should be common salt, which with the turpentine will gently move the bowels, and thus clear out the nauseated or poisoned tapeworms, and carry away besides some of the unhealthy superfluous mucus which in such cases so abundantly covers the intestinal walls, and forms a convenient nidus and shelter for the worms. The proportions of the ingredients for a tolerably strong lamb three months old may be as follows: Oil of turpentine, an ounce; infusion of gentian, an ounce; nitric acid, diluted, ten drops; common salt, an ounce. The dose may be given in water or milk, and be repeated every second day. If it purges unduly, or if the lambs are small or weakly, the quantity must be somewhat reduced. To support the little creatures' failing strength a variety of tempting nutritive food must be given, and if they are still unweaned the feeding of the ewes should be liberal. After being drenched for several days with this mixture, and the tapeworms in great part removed, much benefit will result from the daily use of a good bitter tonic mixture such as the following: Infusion of gentian, an ounce; nitric acid, diluted, ten drops; tinct. chloride of iron, fifteen drops.—*North British Agriculturist.*

THE FARM SERVANTS' MOVEMENT.

MEETING OF DELEGATES AT PERTH.

A meeting of delegates of the Perthshire Farm Servants' Protection Association was held in the Tract Society Hall, Perth, last month, with the view of getting the various Associations in the county, as far as possible, to adopt the same rules and to follow the same line of conduct. Mr. David M'Walter, Fowlis-Easter, presided, and several delegates were present. The rules of the different societies in the county were read over and duly considered. The meeting then took up the subject of the

Hours of Labour.—After a long discussion, it was agreed to fix the hours of labour during the winter and summer as follows:—To rise at six o'clock during the winter season, and make ready the horses; that one hour be allowed for dinner, work till dusk, and have the horses suppered by six o'clock in the evening. In summer to commence at five o'clock, and work ten hours per day, including all manner of labour.

Wages.—The meeting considered that no stipulated wage should be fixed on; but that each member should sell his labour to the best advantage.

Mode of Payment of Wages.—It was also agreed that the wages should be paid monthly, and that one month's pay lie in the employer's hands as security.

Harvest Work.—During harvest it was agreed that the hours of labour should be ten per day, the same as during the other part of the summer season; and that sixpence be allowed for the dinner meal at harvest time.

Extra Time.—It was unanimously agreed that in the event of extra labour being required they be paid at the rate of time and a-half.

Holidays.—The meeting did not think it advisable to stipulate for any number of holidays. This matter was left for the men to arrange when making their engagements.

Entry Money.—It was agreed that the various associations in the county fix 2s. 6d. as the entry money, and 6d. as the monthly payments to be made in advance.

What the Associations are to aim at.—The meeting was of opinion that the objects of the associations should in the mean time be entirely confined to the shortening of the hours of labour, and that the other questions of giving benefit in cases of sickness and distress be allowed to lie over until they were more firmly established. It was agreed that the various associations should, so far as possible, mutually support each other.

A conversation took place with regard to forming a county association; but it was agreed to defer that matter in the meantime. The propriety of having a general fund into which the monies of the various associations could be lodged was also suggested; but, as it was considered that there would be some difficulty, trouble, and expense in transmitting and drawing the cash, the proposal was not adopted.

The meeting lasted four hours.

THE AGRICULTURAL PROGRESS OF AUSTRALIA.

We have from time to time endeavoured to keep our readers advised of the agricultural progress of Australia, to which for our wool supplies alone, to say nothing of food, we are so much indebted. But its strides are so great in all the elements of progress, whether in territorial settlement, in agricultural resources, in live stock, and various other important industries, that it outstrips all ordinary history, and requires careful vigilance to keep pace with its colonizing advances.

Colony after colony has established itself round the shores of the great Austral continent, and these have so extended that division after division has taken place. First Victoria separated on the south from New South Wales, then Queensland on the north, and now we find this last new off-shoot of but a few years' growth increasing and extending to the far north in a manner that throws former colonization progress into the shade. When we look at what Queensland is now doing towards the occupation of the vast territory lying around the shores of the Gulf of Carpentaria, she seems destined to eclipse some of the older colonies in time, unless like New South Wales she becomes shorn of her fair proportions by actual dismemberment.

The progress made in Queensland during the past year in those staple productions which must form the basis of the wealth of the colony has been most satisfactory. Although the extension of settlement has been going on at an unprecedented and rapid rate, the wet seasons rendered the three previous seasons anything but favourable to sheep farmers, and this was seriously felt by all but the occupiers of the very best runs, both the yield of wool and the increase of stock on all the older stations of a second-rate quality being much below an average. The season of 1865 was such as to produce a different result, and the present wool clip is expected to be by far the largest ever exported from Queensland; while the increase of sheep over the colony is also much more than in previous years—so much so, as to go far towards retrieving the position of many of the older settlers on an inferior country. Some of the stations, taken up since separation, have now been established long enough to participate in this benefit, and to give a good percentage of increase on stock. The accounts from the extreme north are very favourable. The whole of Queensland, though a dry season has been experienced, has escaped the drought which has been so disastrous to the new settlements on the more northern portion of the continent. A new trade has sprung up in the export of fat cattle from Gladstone; and the increase of this description of stock is such as to induce the erection of boiling-down establishments at various places on the northern coasts, where the distance from any market renders this wasteful course advisable. On the whole, although the indebtedness of the squatters must be enormous, the past year has added very largely to the wealth of the colony in this description of property, and has added to its power of producing an income in years to come. The success which attended the first cultivation of sugar on the shores of Moreton Bay has led to the occupation of a large quantity of the land for this purpose, at different points on the seaboard, and numbers of capitalists are now engaged in planting the sugar-cane on their estates, with every prospect of receiving a satisfactory return for their enterprise.

We may here refer briefly to the rapid extension of pastoral occupation, during the last four years, in the northern portions of the colony of Queensland over an area equal to that of France: "It is at all times a source of pleasure to trace the rise and progress of settlement in a new country; to observe ite onward strides from point to point—how it spreads leavenlike over the land from centres of occupation, whence fresh adventurers are continually taking their departure. The march of events in a new colony must always be more striking and rapid than in older countries, where the progress is more intimately connected with the material comfort of the inhabitants and the higher organization of their social state. In the infancy of a colony, these latter objects are temporarily sacrificed in the pursuit of the discovery and utilization of the natural resources of the country. This follows from the natural law that a community must first provide for its support before its higher civilization can be worked out. It seems like a marvel as we look back for a few short years, and review the position of the territory now forming the colony of Queensland, and compare it with its present state. A large portion was unknown: the small belts of country that surrounded the tracks of some of the intrepid Australian explorers on the maps of the continent gave little indication of the future suitability of the north for stock, beyond surmise which promised years for its realization. Leichhardt could scarcely have conceived the changes that have followed his footsteps. Little did that brave and hopeful man think that the shores of the Gulf of Carpentaria, which were no doubt associated in his mind with days of peril and painful labour, would in so short a time resound with the bleating of flocks and the lowing of herds; that townships and homesteads would spring up on the banks of rivers, where the primeval silence and solitude was, three years ago, broken only by a few wandering tribes of aborigines, seeking a meagre subsistence along their course. In the year 1861 there were in that portion of the colony lying north of the 25th degree of south latitude the following amount of stock: Cattle, 29,236; sheep, 402,358; horses, 2,161. In three years, namely, in 1864, these numbers had increased to: Cattle, 205,047; sheep, 1,346,426; horses, 7,384. A year and a-half has now elapsed since this computation was made; so that, allowing for the annual increase and large quantity of sheep and cattle which have been driven into the Gulf country during that period by intending settlers, who, in accordance with the Pastoral Laws of Queensland, are, obliged to stock the country before they are in a position to apply for it; and as 4,973 square miles have been taken up in that way, and as the lowest amount of stock required to hold the country so acquired would amount to an equivalent of 124,325 sheep—it will not be an extravagant estimate to assign an increase of fifty per cent. on the numbers computed in 1864, as representing the amount of stock in January, 1866, existing in Northern Queensland."

As to the pastoral district of Burke, of which Burketown, on the Albert river, is to be the township, the amount of stock therein, a year ago, was computed at 71,000 sheep, and 8,000 head of cattle. This is, it is true, but a comparatively small number when the large extent of territory is taken into consideration; but their capacity for increase is far beyond that of ordinary flocks, in consequence of their being mainly composed of ewes. It may therefore be fairly presumed that, by this time, there are fully 110,000 sheep and 12,000 head of horned cattle in the district referred to.

This district of Burke embraces the entire area of that portion of the Gulf country in the colony of Queensland which is watered by the rivers Albert, Leichhardt, Norman, and Flinders, and comprises the very best country in the extreme northern portion of the territory. It has been officially described as follows in the Queensland *Government Gazette:*

"The lands commencing on the sea-coast in the Gulf of Carpentaria, at Point Fitz-Maurice, and bounded thence on the north by a line bearing east to the south-western watershed of the Gilbert River; thence by the range forming said watershed, in a south-easterly direction to the range separating the waters flowing into the Gulf of Carpentaria from other waters; on the east by aforesaid range, which is also the western watershed of the Burdekin river, in a southerly direction to the range forming the southern watershed of the Flinders river and its tributaries; thence on the south by said range in a westerly direction, to a point where it is intersected by the 21st parallel of south latitude; thence again on the south by said parallel to the 138th degree of east longitude, being a portion of the western boundary of the colony of Queensland; thence on the west by said meridian of longitude northerly to the sea-coast in the Gulf of Carpentaria; and thence by the shore of said gulf, in an easterly and northerly direction, to Point Fitz-Maurice aforesaid, and including the islands adjacent thereto."

The general character of the country in the pastoral district of Burke is such as to render it eminently adapted for stock of all sorts. It consists for the most part of extensive black soil plains and open downs, producing grasses of the best description, amongst which the well-known "blue" and "barley" grasses largely abound. The land for the most part is elevated, ranging from 1,600 at the heads of the rivers, to about 400 to 500 feet above the sea, at a distance of a few miles from the shore. This extended elevation will have the effect of making the climate more extreme than is found on the coast. But this in itself will be an advantage, as being more suitable to the constitution of the sheep than the equitable temperature existing along the sea-shore. In addition to the grasses there are a variety of herbs on which stock are found to thrive exceedingly; amongst which may be enumerated "salt-bush," "native leeks," "wild cucumber," and "carrots," owing to the abundance of superior feed and the presumed freedom from drought (which is not generally experienced north of the 19th or 20th parallel of south latitude). Sheep will probably attain considerable size and weight; but this result will, of course, much depend on proper management and to due attention in the selection of flocks for breeding. Whilst the practice prevails of guarding sheep at night, having a shepherd to follow them by day, no marked improvement is likely to be produced for some time to come—particularly as the necessary erections on a run to enable a less artificial system to be pursued requires as a rule more capital than the present squatters are in a position to expend, owing principally to the high price of labour in the remote and partially settled districts of the colony.

Under the existing system of managing sheep in Northern Queensland, a greater yield of wool than 2lbs. per sheep can scarcely be expected in the Gulf country; but as soon as fencing in the runs is generally resorted to, in accordance with the common practice now adopted in Tasmania, Victoria, and portions of New South Wales, a clip of 2¾lbs. and upwards may reasonably be looked for—assuming of course that due attention is paid to the introduction of fresh blood at successive periods by procuring from the South and its colder pasturages suitable rams for the purpose. The principal advantage the she
farmer will derive in fencing his run into several e
closures, and allowing the sheep to roam at will, will
the superior quality of the wool grown on the sheep, t
larger number of sheep the land will be capable of d
pasturing, and also in affording them the most favoura
conditions for lambing, when so much difficulty is usu
experienced in providing green feed for the sheep, whi
the lambs are too young to move far. This will be read
understood when it is pointed out that the overcrowdi
of a large number of sheep into a fold in a warm a
perhaps a moist climate must produce an injurious eff
ultimately on the sheep, which exhibits itself in the lig
ness of the wool grown, and also in time on the gene
constitution, though this latter consequence does not a
pear so certain. The early morning and the cool of t
evening—the very best time for allowing the sheep
feed—is lost to them; they are brought out in a feveri
state in broad sunlight, to graze and make the most
their time during hours when, under a more natu
system, they would be found seeking shade and repose.

There is every reason to believe that the mean annu
temperature will remain very much the same in t
higher lands of the Gulf country as at Port Denison (*i.*
74 deg. Fahrenheit); but that there will be an excess
daily range of temperature in the former over the latt
district. This climatic condition is unquestionably f
vourable to sheep-farming, and, combined with the ric
pasturage with which the Gulf country abounds, ought t
produce sheep of large carcass.

This is a point of great moment to the grazier who i
quite alive to the high prices which fat wethers bring
Calcutta—viz., 30s. a head. Sheep might be shipped
the head of the Gulf of Carpentaria by screw-steame
for Calcutta—a distance of some 3,500 miles—taking a
vantage of the intermediate markets (if found desirabl
of Batavia and Singapore. Or even in seasons
drought, such as the southern colonies have lately e
perienced, a ready market could be found by driving stoc
across to Rockingham Bay, Cleveland Bay, or Po
Denison, and thence shipping to Sydney or Melbourn
Large quantities of stock are now being shipped at Gla
stone (Port Curtis) for the southern markets.

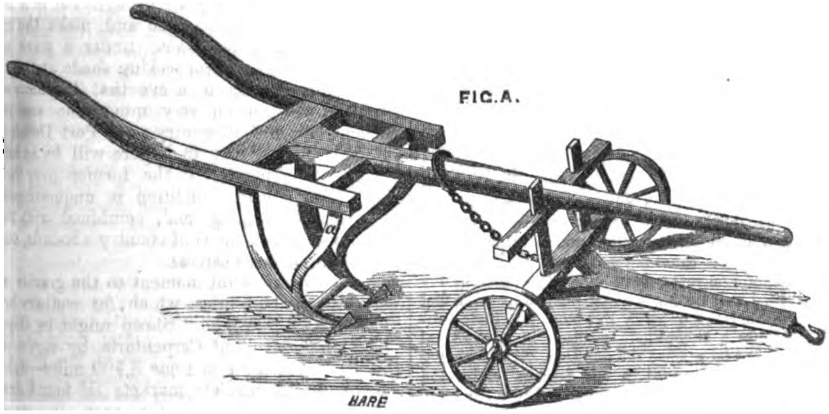
Looking at the fact that the habits of the wealthi
classes of native Indians are exhibiting a greater u
formity with those of Europeans, and that many of t
prejudices arising from the stringency of caste and t
peculiar nature of religious tenets are now dying o
coupled with the great advance the age has made in fu
nishing the Indian population with those mighty aids
civilization, the railroad and electric telegraph, which w
ultimately tend to assimilate them to their Europe
brethren, it is not at all improbable that a growing fo
ness for Australian mutton, by its superiority over t
native article, may be fostered, and that in order to su
ply the demand a trade may spring up, which may bri
wealth and happiness to many a homestead in Queen
land. Horses will also be found a source of profit in th
district. The suitability of climate and other conditio
for breeding, together with the comparative vicinity
a ready market in India, will ultimately develope
trade which will scarcely be less profitable than shee
farming.

The black soil flats extending along the banks of t
navigable rivers, which have been reserved from pastor
occupation, together with the coast reserve, extendi
back three miles from the sea-margin, will be found a
mirably adapted for growing sugar and other tropical pr
ductions; and upon the introduction of suitable labou
this district of Queensland may alone outstrip the colon
of Natal.

There is no district in the colony where so much first pastoral country exists. From the head waters of principal rivers to within a few miles of the coast, the plains before alluded to extend without break. When occupied, the district will be capable of depasturing or four millions of sheep, and at least two hundred and horned cattle and horses; and when fencing is duced, 50 per cent. additional upon that estimate. resident population of the district is as yet limited few hundred souls; but now that a resident magis- and an effective body of police are located at Burketown, many large stores, public-houses, and dwellings are being erected by men of capital; and the foundation has been laid, in the far north, of a great city and mart of commerce. The electric telegraph has, we believe, already been pushed on from Bowden (Port Denison) to Cardwell (Rockingham Bay), and thence 360 miles to Burketown, which is now the first Australian town to receive the news from Europe through the Indian and Australian telegraph wire; and the Queensland Government has now a regular monthly mail from the Gulf to Brisbane.

HOW TO HARVEST MANGEL WURZEL.—THE SILESIAN SYSTEM.

[TRANSLATED FROM THE GERMAN.]



Silesia, where the cultivation of wurzel (sugar-beet) is on to a large extent, it is customary to commence harthe crop about the month of October, as soon as the of the plants have begun to assume a yellowish tinge. the purpose of extracting the roots the above instrument Fig. A) is universally used. As may be seen from the engraving, this instrument is of the simplest construc- It consists of two shares, similar to those of a plough, a length of 15 to 20 inches. These shares are at a distance of 15 inches apart at the top, and gra- near each other towards the points, where the distance the two is not more than 6 inches. The shares are at the bottom by means of a perfectly round iron in order to ensure the requisite firmness (the resist- be met with being considerable), they are further con- with the body of the instrument through two flat pieces (a and a on the figure). As fore-wheels, those of a plough may be used. This instrument is driven down of plants, and in such a manner that each root comes the two shares of the plough. The soil around the thus loosened, and the roots being pressed partly by means of the aforementioned *round* iron bar, the can now be removed with the greatest ease by gangs of or children. With this instrument one man with a oxen is able to plough up 3 Prussian morgen (equal to two acres) of sugar-beets per day; and 6 or 8 following him can pull, clean, and cut off the leaves, in the buries about one morgen. The plants are the slightest degree injured by this instrument (as is the case when forks, &c., are used). Besides this, the of labour must be borne in mind, which is of the importance at the present time, when the cost of is continually increasing. Another advantage resulting the application of this instrument is, that it obviates the of ploughing for winter corn after wurzel, the land already been sufficiently broken up by means of the two and only requiring harrowing. In Silesia the land in- for winter corn after wurzel is exclusively prepared by of the harrow; and the rye-wheat there stands as well wurzel as after any other crop. An additional reason for this, however, is that the wurzel crop is always strongly manured. The preservation of the wurzel crop there is nearly the same as in other parts of Germany. If there is sufficient time to spare, the roots are carted to one end of the field, and there placed in long buries about 8 feet broad and 5 feet high; they are then covered with straw, and sufficient earth to prevent the straw from being blown away. At the commencement of the cold season another layer of earth of several inches in thickness is spread over the whole bury, with the exception of the comb, which remains open. In order to complete the covering of the buries, a ditch of about 1½ feet in depth is dug round each mound, and the soil here excavated provides the necessary layer of earth. Boards are placed along the top of the bury during this operation, in order to prevent the filling up of the comb. After the roots have been left in this state for about three weeks, they are again covered with a layer of earth of about 1 foot in thickness. At the top of the bury wisps of straw are then inserted at intervals of from 5 to 6 feet. If there is a scarcity of working cattle during the harvest the following method of preservation is observed: The wurzel, after having been cleared by women, are thrown into large baskets, and then placed in small heaps in different parts of the field; they are then covered with earth in a perfectly air-tight manner. Many farmers in the neighbourhood maintain that this method is preferable to the first, but it has, at any rate, the disadvantages, first, of preventing the carting off the field in wet weather; and, second, the roots become very dirty through the contact with the soil. For these reasons the first method is the one more generally adopted. The leaves of the wurzel are used as fodder, either in a green state or else dried or soured. The latter mode of preparation is the one most adopted. For this purpose all large farms are provided with pits for the preparation of this food. In these pits layers of chaff and leaves are alternately placed, and sometimes a small amount of salt is added. During the laying of the leaves they must be trodden down tightly. These pits must be provided with a shelving roof, in order to prevent the penetration of moisture. The last layer of leaves in the pit is covered with a one-inch layer of soil, thus preventing the circulation of air.

F. Rhodius.

ARE THE PRESENT HIGH PRICES OF STOCK LIKELY TO CONTINUE?

The following paper was read at the quarterly meeting of the Galashiels Farmers' Club, by Mr. WILLIAM SCOTT, Mossilee:—

The subject for discussion to-day is the important question, "Are the present high prices of stock likely to continue?" I have called this an important question; and most certainly it is so to the farmers of this and other countries, and also to the British public. It must surely be of the greatest consequence to the farmer to have this matter thoroughly discussed in all its bearings, for it is only in this manner he has any chance of ascertaining whether his business is likely to prove profitable or not. I suppose we may take it for granted that stock-farming has been paying well for the last two years, owing to the extraordinarily high prices which have been obtained for live stock and their products. But as people are apt to lose their usual caution, and run into wild speculations in times of extraordinary prosperity, little caring for the lessons of past experience, which should surely remind them of the dull times and misfortunes by which such periods have always been followed; so, just as a sort of corrective remedy to the excitement caused by the present high rates, we would do well to consider the important question, "Will the present prices continue?" Well, then, it being an admitted fact that the present rates are higher than usual, let us now proceed to consider some of the causes which have brought about this favourable state of things. The first cause is the scarcity of lean stock, there having been, of late years, great difficulty in getting any number of well-bred animals for feeding purposes. The fact is, that till within the last few years live stock and their products have held quite a subordinate position in agricultural practice; and it is not long since the question, "Does feeding cattle pay?" was often discussed in our farmers' clubs, and settled in the negative. The grain crops, and in a few more favoured districts potatoes, were at that time the main products of the farm; and the small quantity of stock that was kept was only put up with because it enabled farmers to grow better crops of these remunerative articles, so that it is really no wonder they paid so little attention to their sheep and cattle, and sent so many of their calves to the butcher. This state of things has also been favoured by the want of keep through dry scorching summers, followed by some very severe winters—such, for instance, as that of 1860, when it is well known many of our hill farmers were nearly ruined by the loss of thousands, both of lambs and old sheep. And then, again, there is the modern improvement of forcing forward all animals to maturity at a much earlier age than was done a few years ago, both sheep and cattle being now slaughtered at least one year younger than at that time. The next thing I would allude to, as conducing to these high rates, is the present prosperous state of our commerce and manufactures, and the consequent abundance of money in all classes of the community. The result of all this is, that there is such a demand for labour that wages have been raised very much, and our intelligent working-classes are now living in a state of comfort and prosperity, which can stand a very flattering comparison with the condition of similar ranks in other countries. The low price of grain should also be mentioned here; for, by giving the people a plentiful supply of cheap bread, they are enabled to spend the more on dear butcher-meat. Nor is this a mere empty theory, for most of the working-classes now sit down to dinner with a good supply of butcher-meat and the best of everything, which were luxuries almost unknown to them a few years ago, when wages and meat were low and bread dear; and it was only the other day a working man said to me, "It's expensive livin' in the toon the noo; flesh is awfu' dear; it's a blessin' the loaf's sae cheap, or we could never afford to get a bite o' *meat* at a'." In such a statement as this of the reasons of the present high prices, we must not omit to mention the alarming disease which is now decimating our herds and ruining many farmers; for there is no doubt that the cattle plague has helped in more ways than one to raise the price of flesh meat, and it seems more than ever likely to have a still greater effect shortly. And there is still another reason which has sprung out of the last-mentioned case; but as that sca
concerns us as farmers, I will not enter into particulars,
merely refer you to a December number of *Punch*, where
most of you will remember, he gives an account of the "
real *Rinderpest*." And now, gentlemen, having thus b
brought before your notice a few of the principal causes w
have helped to bring about the present high prices, I will
go on to consider those and other circumstances more mi
for the purpose of inquiring whether or not they are lik
continue to operate in such a way as to maintain the p
favourable state of things.

THE PRESENT SCARCITY OF LEAN STOCK.—The
the causes mentioned was the scarcity of lean stock; a
reason of this was, that farmers have till lately been p
comparatively little attention to the breeding and manag
of sheep and cattle. However, the case is altered no
tide of prosperity runs in a different direction, and the
duction of grain, which had long been the mainstay of
farming, has now become nearly unprofitable, throug
enormous importation from abroad. Farmers are now
turning their attention more to the management of live
and the animals which were lately considered only nec
nuisances—mere manure-making machines—and the
of which did not pay for the food consumed, are now
the most remunerative products of the farm, and com
price in the market which would have been regarded a
lous and impossible only a few years ago. In conseq
these high prices, farmers are now making great end
to increase the number of these useful animals—and all
to their efforts! What employment could be more p
worthy than increasing the food of the people? T
nothing new in the history of agriculture. If we look
through the last twenty years we will find the same
going on as energetically as now, though with a different
The increased production of grain was at that time the f
great object, and no wonder; for corn was then very
able, wheat often bringing from 60s. to 80s. per qr., a
other cereals in proportion. And, as the natural conse
of these high prices, they paid most careful attention
cultivation of these crops, and tried all plans to raise th
tility of their soil by more liberal application of manure
so on. This very time gave rise to many of the most i
ant improvements which have raised the science of agric
from the old jog-trot of drudgery and routine in whic
grandfathers found and left it; among these may be men
the improved system of deep drainage, the introduc
guano and other artificial manures, and the consequ
tended cultivation of green crops. Now it was that the
ing mill, the reaping machine, and all the long list of new
ments came into use. They even turned to their own e
mighty power of steam, which is destined to revolutio
our farm economy, and to do as much for agriculture a
done for manufactures. Not content with the land
under cultivation, they turned their longing eyes on th
hillsides and the watery bogs which had lain till the
state of nature, maintaining nothing but the wild curl
plover, with, perhaps, a stray sheep here and there; and
they changed the bleak moors into fertile fields, and c
them with luxuriant crops and numerous flocks of w
sheep. But I have no need to talk of reclamation a
provements on the banks of Gala Water; suffice it to te
urged on by their own inherent spirit of energy and th
of the high prices, the farmers of this and other countri
so much attention to their grain crops that in a few ye
we all know only too well, the supply exceeded the d
and so the prices fell below the cost of production. Th
thing is going on now, as it ever has done, and ever sh
when the price of any one article gets high; and as
just going through the same process, let us beware th
boasted enterprise and wild speculations allure us not in
same state of wreck and misfortune as that into which
farmers were a few years ago plunged when the prices of
fell from their high war rates to their natural level. But

you may think it impossible this should ever occur, supposing that the number of live stock cannot be increased to a degree. It has been stated that farmers are doing a deal to forward this object; and let us now go on to con- how far they are likely to prove successful, and what their exists for improvement. You know well that there othing easier than increasing the mere numbers of our ck; and the only difficulties that lie in the way worth our deration are comprised in the questions—Is it possible to ease the quantity of food for stock? and, having done so, it pay?

an we Keep more Stock?—Keeping in mind that ers are going into this matter with their whole heart, let quire how far they are likely to succeed in increasing the nt of their food for sheep and cattle. There is no opinion ach against progress, none so apt to make us settle down elf-complacency and sloth, as the deluding idea that we attained perfection. It is an admitted fact that the ce and practice of agriculture have made great progress of years, and we are all proud to know that our times will nded down to posterity as the brightest earliest days of vement; but still, taking the agriculture of England and d as a whole, high farming is yet the exception, and he rule, and in many parts of the country there still exists for improvement. Among them may be mentioned ainage, which is an improvement of the first im-; r till this is done where really required, it is ying large quantities of lime or other manures, only half lost. The great progress which has yet n this matter will be more apparent when you re- there is the enormous extent of 21,000,000 of acres ll in want of this first step of improvement. Deeper n is the next mode of improving our land and in- the amount of our food for stock; and although the depth of the cultivated soil of this country is generally d at four inches, yet the great advantage to be derived eeper ploughing is now so well understood and acted t there is no doubt that in a few years this will be more doubled. The principal advantage of this will be larger ; but another consideration is, that when all this is car- t, our grass and other crops will not be nearly so liable scorched and burned up in dry seasons like 1864, and so eep and cattle will not be subjected, as they have lately to famine and drought every few years. A more liberal artificial manures and feeding stuffs would be a very and profitable mode of increasing the production of r-meat and wool; but improvement is much required for many farmers still scarcely believe in the use of these . And then, again, there are the twelve millions of acres d land, fit for improvement by the plough, which, owing ain hindering causes, are still in a state of nature. It is ly most astonishing that such should be the case at this ced stage of agricultural progress, and it shows very y that there is something totally wrong with our whole ; and the hypothec, game, and entail laws have already o much discussed, and blamed with fettering and retard- e efforts of progress, that it is scarcely worth while say- re of these old remnants of feudalism here than that the they are rectified, just the quicker will renewed improve- and prosperity come for landlord and tenant, and the nity at large. The amount of food annually lost to the y through the want of the cultivation of this enormous of land cannot be estimated in these dear times at less forty millions of pounds—a large sum certainly, to lose own want of energy and progress; and the worst of it that the very want of that food sends us to other coun- in search of supplies. Now, all this money might be t home to raise the comfort and prosperity of our own ltural interests; but it is sent abroad to foster and en- e foreign agriculture—the very system which has lately d the whole current of our prosperity, and brought of our corn farmers to ruin. But in spite of all the dis- ages under which they labour with great energy and rance, farmers are everywhere making great encroach- on this little country of waste land, and so the area of roducing land is every year increasing. The quantity of r stock might be very profitably increased were we to he system of cropping, and grow less corn, the cultiva- f which is both unprofitable and laborious. Though has got a little dearer this year, it is well known that it is entirely owing to some political disturbances of a temporary character, and it is only in years long distant, when the population of this world has doubled itself, that there is any chance of corn ever again rising to the old protection prices. If more attention was paid to the cultivation of roots, tares, and other food for stock, the numbers kept might be greatly enlarged; and more especially would this be the case if more land was kept in grass. The status of the farmer with regard to education and intelligence is also rising fast; and the time is coming when we, as a class, will no longer be liable to be taunted and jeered by public writers as being far behind our commercial and manufacturing friends in this as well as every other branch of improvement and progress. And when the hindrances and fetters of which I have spoken are removed, and all the improvements we have just glanced at thoroughly carried out to the state of perfection to which they are fast hastening, then there can be no doubt that the produce of this country, and more especially the amount capable of being used as food for stock, will be far more than doubled. And now, having plainly shown that it is easy for this country to produce as much butcher-meat as ever she is likely to require, I would take a glance at the other question proposed, which was

Will it pay?—Will it pay the landlords and farmers to carry out all these improvements? This is very easily answered in the affirmative; in fact, so much have the opinions of farmers advanced in late years, that people would think we had newly come from the backwoods of Canada were we seriously to discuss the question. So now, having seen that farmers can easily increase the numbers of their live stock, and that it will pay them well to do so, there is no doubt that they will do this as soon as possible; and they are doing so, for, on many well-managed farms, there is not half the land cultivated for grain that there used to be. On such farms the number of live stock has been nearly doubled; and as this is going on over all the country, we may surely expect that in a few years hence (unless the plague proves all the more destructive) there will be no longer any need to complain of the scarcity of lean stock. The next cause of the scarcity, and consequent high prices, was the want of food, and great loss and deterioration of stock by the late severe seasons. When all the improvements just mentioned are carried out, there will be less need to complain of these losses; for where land is well drained, and kept in good heart, the crops have more stamina and strength, and are, therefore, not nearly so liable to be scorched and burnt up by long droughts. There is also more attention now paid to growing a larger amount of food for stock, and cake and other concentrated feeding stuffs are now more largely manufactured in consequence of the great demand; so that, taking all these things into account, when severe seasons like 1864 do come we will be very much better prepared for them; and so there is little chance that our stock will ever again be subjected to all the horrors of famine and death, as they have lately been, and that cause of scarcity and high prices is scarcely ever likely to return.

The Prosperous State of our Commerce and Manufactures.—We come now to consider the present prosperous state of our commerce and manufactures, and the present high wages of the working classes, which are great causes of the present high prices. Has this country to be favoured with a long continuation of the present prosperity? This is a world of hill and valley; and as nature hates the level monotonous plain, so whether we turn to the history of individuals, nations, or trades, we find the invariable rule is the old story of the ups and downs of life. It has now become a well-known fact in the history of commercial industry that seasons of unusual prosperity always lead to over-speculation, which is as invariably followed by the consequent crisis and depression of trade. We have all too much cause to remember the last of these sad occasions, which occurred in 1857, when many who till that time had been living in comfort and affluence were completely ruined. When we look back through the commercial history of the last forty years, we find six similar seasons of great prosperity, all followed by their corresponding terms of hard times, dull trade, and disaster. The rule of supply and demand comes in here as well, and the present extraordinary desire for manufactured goods of all kinds is sure to be met by an increased supply. Take our own flourishing town of Galashiels as an example of this. Look at the improvements her energetic manufacturers have introduced, and most expensive machinery which they have put up. Think of the thousands of intelligent workers they have brought from all parts of the country, and their factories going night and day; and all with the object of producing the greatest possible quantity of their valuable manufactures. And knowing that the same thing is going on all through the country, can you doubt that all this must end in an increased supply and a satiated demand? The manufacturers of the Continent, and America too, are now making great progress; and the time is fast coming when they will not only supply their own wants, but compete with us in all the markets of the world, and then our manufactures will not be so much required. So that there is every chance of an increasing supply of all our high-priced manufactures being met by a lessening demand; and the consequence of all this must be less need of labour and lower wages, and so the great demand for our agricultural commodities among the middle and working classes will be very much checked. We come now to consider

The Cattle Plague, in so far as it concerns our present subject. This is a theme on which we must not enter in detail. I would only remark that had our Government adopted the strict regulations at the first, which the virulence of the disease has at last forced them to issue, it is more than likely it would have died out ere this time; and all we can now do is to assist the authorities as far as we can by attending to their well-meant orders. But in the meantime there is no doubt but the disease will cause a great deal more destruction among our cattle, and so raise the price of butcher-meat to a higher rate than it has yet reached. We often hear the opinion expressed just now that if the disease is not checked soon it will make such havoc among our cattle that they will be both scarce and dear for many years to come; now all the facts of the case go to shew that this is an erroneous notion. Suppose the disease does spread, and that, in consequence, the prices do rise to a rate we never heard of, just the sooner will the law of supply and demand come into operation; and so the numbers will increase, for the old proverb says that "a seen dearth never comes." It is a fixed law of political economy that no article or branch of trade can continue for any time more profitable than the rest; for when any one commodity gets very high priced, all who have the opportunity strive to produce the largest possible quantity of that article, and so the demand is more than met, and the price falls. I would just mention the past fluctuations in the price of wheat as an example of this principle. In the year 1800 wheat was as high as 130s. per qr., but in consequence of the naturally increased supplies, it fell again, in the short period of three years, to 59s., or less than half the former price; however it rose again in 1812 to 127s., but it came down as quick, and in 1822 we find it at 45s. In 1855 the rate was 75s., and we soon saw the consequence—the growing of grain was all the rage, not only in this country, but through the whole world, from the wild shores of the Baltic to the fertile plains of Italy, and the wide prairies of the far west. Wherever there was suitable land, and men to till it, there was the cultivation of grain carried on, with such energy and vigour that in a few years our markets and granaries were overstocked, and the prices fell far below what would have been a profitable return to the British farmer for his capital and skill—so low, indeed, that it only paid well in those continental countries, where labour costs 8d. a-day, and good land a crown the acre. If we turn to sheep and wool, we find that the prices have always varied in a similar manner with the supply and demand, and the following quotations from the Inverness market list will go far to establish my present remarks:—In 1818 the price of Cheviot wedders was 28s. In two years they were down to 20s.; 1822, 12s. 6d.; 1825, 29s.; 1827, 15s.; 1836, 24s.; next year, 19s.; 1856, 22s.; 1863, 30s.; 1865, 45s. In 1819 Cheviot lambs were selling at 10s. 6d.; in 1822, down to 4s. 6d.; 1838, 12s.; 1843, 5s.; 1860, 12s. 6d.; next year, 9s.; 1863, 14s.; 1865, 18s. We will find wool, which has lately been one of our highest-priced productions, subject to the same fluctuations; and making laid Cheviot the subject of inquiry, we find it at 40s. in 1818; next year, 21s.; in 1823, 9s.; next year, 13s. 6d.; 1843, 9s.; next year, 15s.; 1860, 22s.; 1864, 37s. I have said that this is a world of ups and downs, and never-ceasing variations; and here is a list of changes with a vengeance! These quotations are of great importance, for they shew us that there had been great changes going on among the flocks through good and bad seasons; and also in the demand, through prosperous and dull time, war, and so on. When prices have varied so much in the past, what reason have to expect that they will remain unchanging in the futur Has human ambition—the desire to turn our industry and fa to the production of the most profitable articles—the cert law of supply and demand—have all these established rule the past to be abolished now? and all, that the farmers of t country may continue to get large prices for their stock? idea is preposterous, for prices always have varied with ever-changing circumstances in which our country has b placed; and the facts of the case all go to show that they alter in the future as they have done in the past. Nor butcher-meat prove an exception to the general rule; people of this country will not long be content to pay the sent extravagant price for that necessary article of their d food. It must be apparent to all, who pay any attention to Board of Trade returns, that had it not been for the distu ance caused in our cattle markets through the plague, butc meat would have been, even by this time, a good deal chea in consequence of the enormous importations from o countries.

Ireland.—We are likely to get greatly increased sup from Ireland, now that she has got rid of three millions o over-abundant population, and they have begun in r earnest to the work of agricultural improvement. I need nothing here of the fertility of her soil, and the quality of pastures, where good management does prevail; for w know that the best of them will feed a bullock in sho time than ours will, even when cake is given in additio the grass. It is estimated that there are 5,000,000 acre for improvement by the plough; and its only a pity good land has been so long badly managed, and comp tively lost to the world; but brighter days have come for at last, and great improvements are now going on. Irelan by far the wettest part of the kingdom, but in no other cou would the expense of drainage be so well repaid; and moist climate makes her better adapted for a grazing tha arable system of farming. They have sent us across m cattle and sheep for a long time back, but till lately these very inferior; however, the quality is much improved and the largest proportion of our store cattle are at pre sent from Ireland. There are many superior cattle in country, and they are paying great attention to improving breed by purchasing our prize animals and so on. There at present 3,403,414 cattle, 3,688,742 sheep, and 1,299, pigs in Ireland; but these numbers give but a slight ide what that evergreen island is capable of maintaining; an she escapes the ravages of the plague—as she is likely to d her live stock will increase to such a degree, that she will us a very much larger number of animals than she has done.

Foreign Importations.—Our high prices have ex the attention of continental farmers too, and they are sending large supplies of sheep and cattle; but it is on late that they have turned their minds to exporting live to this country, as a profitable branch of their business. have been sending us a few every year since the introdu of free trade; but it was not until last year that they se any considerable number. It was always the opinio farmers here that foreigners could never compete with the production of butcher meat; and as some of you may hold that notion, I think it will be very important for take a glance at the farming of the various European coun and see whether or not they are capable of sending us more live stock than they are now doing. I would first your attention to that part of the continent included in Fr Spain, and Portugal. Great though France is in some res her farmers have still much to learn, and we must still the three countries just named in the second class, at lea regards their agriculture. France is comparatively very —in fact, there is very little of it but might be very prof be brought into cultivation; so that the 58,000,000 of at present under the plough will soon be doubled if they with improvements as they are now doing. It is gene allowed that they are a century behind in the general st their agricultural progress; but in spite of all this they a large number of live stock, including 9,900,000 cattle. have more sheep than we have, which is not to be wonder seeing that France is double the size of Britain; but the number of 35,000,000 is made up of many different bree which the Merino is by far the most important. Most o native breeds of sheep and cattle might be much improved; and in order to effect this they are importing large numbers of our best animals. There are great improvements going on, such as draining and reclaiming waste land, increasing and improving live stock; and now that their energetic and farming Emperor has fairly turned his attention to the promotion of agriculture, we may surely expect to see her advance with rapid strides in the bright path of progress; and there is no doubt but that her farmers will soon be able to maintain and send us more than double the amount of live stock they do at present. Spain and Portugal are among the most fertile countries in Europe, and well adapted for all sorts of farming, and manufactures too, if the easy-going inhabitants would only exert themselves, and use the means of success which Nature has scattered around them in rich profusion. These countries are very suitable for grazing sheep and cattle, and so they devote much attention to these, and more especially to sheep, the Merino breed of which is the best in Europe, and has done much to improve the sheep of the continent. The latest statistics with regard to cattle refer to 1846, and give the number as 3,000,000; but they have increased largely since then, and so has the quantity of sheep, which was at that time 18,000,000. To show the little expense they are put to in raising their stock, I may mention that grass land costs from 1l. to a few shillings per acre, and wages are correspondingly low. These countries are now regaining something of their old splendour, and if they go on improving as they have done for the last few years, they will soon rank among the best pastoral countries in Europe. The next countries I would glance at are Belgium, Holland, and the whole Germanic Confederation, which includes the best and most carefully-farmed districts of the continent. The system of farming in Belgium has long been famed, and is often held up for our example: and large parts of the other States would stand a very fair comparison with our own country. Like ourselves, they have till lately been paying more attention to the cultivation of grain than to live stock; but they have now begun in right earnest, and are sending us sheep and cattle by the thousand; and as an example of what this part of the continent can already produce, I may tell you that some of their sheep brought 62s. each in Edinburgh market last year. Austria, and the inland parts of this extensive district, have long been comparatively excluded from commercial intercourse with us by their peculiarly central position and want of sufficient means of communication; but, thanks to the railway system now largely introduced, the untold millions of stock grazing on these fertile plains are now within a three days' journey of our markets. I cannot do better than introduce here a brief extract from Professor Simonds' late address on the cattle-plague, for it goes far to corroborate my statements. He says: "Formerly little stock was brought to England from these districts, but within the last two or three years the great demand for foreign cattle for English consumption has so increased, that cattle during that time have been brought from Vienna, Hungary, Poland, and various other districts. . . . . There are now three lines of railway stretching from Western Europe all through these countries, one of them going through Cracow." Time would fail me were I to speak of all the other countries in detail; it is enough to know that, turn where we may—through Denmark (the Scotland of the continent), Sweden, or Russia, with its plains of unrivalled extent and fertility, and its grassy steppes swarming with sheep and cattle—the people are all turning their attention as much as possible to the management of live stock. The railway system is spreading very fast through the continent, and there are already numerous lines stretching all through the best stock districts—one of them, as we have just heard, going all the way through Poland and Russia. And if, along with these lines, we take into account the many navigable rivers that flow down through these fertile districts into the sea, at no great distance from our own shores, we see that they will have really no difficulty with regard to the transit of any number of animals. The farmers of even the most distant States are now enabled to send us their stock in better order and in shorter time than it took our northern friends to send theirs from Aberdeen to London a few years ago. From the facts already given regarding these countries, it must be very apparent that they have unlimited resources at their command for the rearing of sheep and cattle; and any farmer knows that when foreigners can send us about 60,000,000 cwts. of grain—as they lately did in one year—there is nothing to hinder them to supply us with a great deal more stock than ever this country is likely to require, let her population and prosperity increase as it may. There has been a great increase in the importations of these animals this last year, even in the face of the disturbed state of our markets and the restrictions put on the cattle trade in consequence of the plague; and, indeed, the numbers have been increasing every year since our high prices began; but the following statistics speak for themselves:—

Imports of	1852.	1862.	1854.	During 11 months of 1864.	During 11 months of 1865.
Cattle ...	61,650	68,818	179,507	141,778	196,030
Calves ...	24,870	29,069	52,227	44,678	48,926
Sheep ...	192,585	299,472	496,243	412,469	763,084
Swine ...	15,599	18,162	85,362	68,777	114,766

I am sorry I have not been able to obtain the returns for the whole of last year, as these are not yet published; but during the first eleven months there has been a great increase over the corresponding period of 1864, the total number of all animals imported being, 1,122,806 in 1865, against 667,702 in 1864, giving an increase of 455,104 animals in 1865. There is much to be learned from these Board of Trade returns, for they show us, in some measure, the capability of the continent to supply us with stock, and the astonishing ease with which the farmers of other countries can change their system from the cultivation of grain to the management of sheep and cattle. But these are only the first-fruits of their new speculation; the fact is, they are just newly beginning this profitable business, for, if we except Belgium, they have only kept stock on the hills and such other parts of their land as have not yet been brought into cultivation. Most of the Continent is fifty years, and some parts of it a full century, behind us in their system of agriculture, and more especially in their implements and management of stock; but they are now fast awakening from the lethargy of ages—they are selecting our most improved implements, and best stock for breeding purposes, and our high prices, and the great amount of money we are now sending them are urging them on so very fast in the right way of improvement and progress that in a few years they will send us four times the number they are now doing.

THE IMPORTATIONS FROM SOUTH AMERICA AND AUSTRALIA.—We come now to consider the supplies of salted and dried beef and pork, which now form such important items in our importations of foreign produce, and these have also been largely on the increase since our present high prices began. We need not wonder at this increase, for these are the very articles which are easiest carried, and can be brought in as good order from Australia as they can from the nearest continental ports. There were 294,138 cwts. of these provisions imported in 1853, and in 1863, just ten years after, they had increased about eight-fold, or to 2,329,429 cwts. This part of the importations is likely to go on increasing faster than ever; and it will pay the producers long after these commodities have got so cheap as to cease to pay the farmers of either this country or the Continent. And when we consider the vast resources of the countries from which we are to derive these supplies, we we will cease to wonder at the enormous importations. Look at the countless millions of cattle now grazing on the fertile plains of Australia, New Zealand, and South America, and most of which are of such little value to their owners that they are glad to boil them down for the sake of their tallow. How much better would it pay them were they to salt the beef and send it here, for they could well afford to sell it at 3d. per lb.! in fact, I observe American beef, of first-class quality, offered for sale in Edinburgh just now at 30s. per cwt. which is just about 3d. per lb. Our scientific men have long been trying to find out some easy way of preserving meat without salt, and they have been at last successful; and a public company has lately been formed for the very purpose of slaughtering and curing the animals in these countries and sending them across for our consumption. So we will hear no more of the farmers in these far-off lands boiling down their cattle, but they will send their millions of grass-fed animals here by the ship-load; and when the importations are so much increased, are our present prices likely to continue?

THE NEW CHEAP MEAT COMPANIES.—There is great dissatisfaction at present through the whole country about the high price of butcher meat; and no wonder, for it must tell severely on our working-men when that important article of their daily food is so very expensive. However, they have the remedy very much in their own hand, for it is well known that whenever any commodity gets too high-priced, they stop the consumption immediately, and so the price falls again to a reasonable rate. This check on the prices is coming into operation already, for it is as much the lessened consumption, owing to the prices being beyond the reach of the great mass of our population, as either the cattle plague or the foreign importations, that is causing the present dulness of our markets. One of the most important questions of the day is how to reduce the price of butcher meat; and when public attention is fairly turned to this matter they will soon find the means of accomplishing the object on which they have set their minds. In fact, they have already found a good plan, for most of you will have seen accounts of those companies which are being formed, with great success, throughout the principal towns of England, for the purpose of supplying our country with cheap meat. I would direct your attention to "The National Cattle and Meat Company," lately established in London, with a capital of £1,000,000, for that very purpose; and they intend to do this by importing the animals direct from the Continent, where they have sent agents for purchasing stock on a large scale. I give you the following extract from their prospectus to show that they are in real earnest: "The present and past condition of the meat market proclaims this movement to be a public necessity. It is obvious that a company so regulated, directly purchasing on a large scale, must be able to supply meat of a better quality and at a lower price than can be done by private individuals. .... A careful consideration of the most reliable data shows that a company so founded can deliver meat to the consumer at 7½d. per lb. at present, and still leave a handsome profit to the shareholders; whereas the prices now charged in London are from 11d. to 14d. per lb." If these companies can manage to sell meat at these cheap rates, butchers will be compelled, by the force of competition, to lower their prices in the same manner, and so the price of the living animals will be lowered also. If they can afford to sell so cheap just now, what would the price have been a few years ago, when everything was a great deal cheaper?—something like 4d. per lb., I suppose, which is a price we may hear too much of sooner than we expect. The tendency of the value or price of all articles is always towards the cost of production, and when it does fluctuate either above or below that standard, it is only because of the variations of the supply and demand. Before the improved means of locomotion came into use, this rule applied to every country by itself alone, and the price of wheat in this country was just what it cost the farmer to grow it; but when the means of conveyance were altered, and the expense lessened, the price fell at once to what it cost the farmers of other countries to produce and send it here, which was less than 40s. per qr. In the same manner the price of the articles before us will soon be just what they cost on the Continent, with the addition of the expenses incident to their carriage to this country; and these prices will always be lowered just as the system of foreign farming improves and the cost of conveyance falls.

THE PRICE OF WOOL.—The question before us also includes the future prices of wool; but, as I have already detained you too long, I must now be as brief as possible in these remarks. Wool has been the most profitable of all our farm produce for the last two years; and this was mainly owing to the scarcity of cotton, through the American war, and the opening up of new markets by treaties of commerce, and so on. The American war is over at last, and that unhappy country is now settling down into a renewed state of energetic prosperity; and one good result of that inhuman war will certainly be an increased supply of cotton from every country suitable for its production; and so the price of it will be lowered also, and it will soon regain its place in the fickle favour of fashion, which, during the late scarcity, was usurped by articles of woollen manufacture. I have said that farmers are everywhere turning their attention more to the management of live stock, but this refers more especially to sheep, for the high price of wool has turned the balance in favour of sheep, whereever the position of the farmer gives him the power of choosing between them and cattle. The cattle plague has also helped greatly to encourage the keeping of sheep, both in this count and through the rest of Europe; and if that disease does co tinue much longer on this side of the wild steppes of Siber there is no doubt that sheep will, in a great measure, take t place of cattle, and then there is sure to be an over-supply wool. And when the farmers of Australia and America beg to send us their butcher meat, then they will pay a gr deal more attention to the breeding and management of th stock, and so they will be able to send us double the quant of wool they are now doing. I have also alluded to the f that there is little chance of our manufacturers being able maintain their present high position in the markets of t world; and if they go on as they are doing just now, the d mand will soon be more than supplied, and then we will ha plenty of cheap cloth, and, as a matter of course, cheap wo Taking all these things into account, can we come to any oth conclusion than that 60s. will soon be as much a thing of t past for a stone of wool* as it is now for a quarter of wheat

CONCLUDING REMARKS.—And now, gentlemen, in bringi these remarks to a close, I would just remind you of t various facts now brought under your notice. We have se that farmers are making great endeavours to raise both t number and quality of their stock, and that they have sti plenty of room for doing so: we have seen the enormou quantities of these valuable animals which are now coming t our shores from all quarters. You have also taken with me rapid survey of the present state of farming in the continent countries, and seen that they are just beginning the profitabl business of feeding stock for our markets, and come to the con clusion that they are certain to send us a greatly increase number very soon. And you have heard that along with thes larger supplies there is likely to come a lessened demand caused either by the high price or commercial difficulties an dull trade. And having heard the whole circumstances of th case, we can surely come to no other conclusion than that ou present prices are not likely to continue. I ought to apologis for detaining you so long, but really the great importance o the subject is my best excuse for the length of these remarks; and if I had not been requested by the Club to introduce th subject, I would never have ventured to trespass *so* far on your patience. This subject is doubly important at the present time, for really our affairs are in a very peculiar state just now. Farmers were just recovering from the effects of the losses of the late bad seasons and the ruinously low price of grain, when the cattle plague appeared with all its disheartening disasters —loss of stock and capital, which a rack-rented tenantry can ill afford. We are now threatened with yet another rise in the price of labour, which, in spite of all assertions to the contrary, has been steadily rising all through the last twenty years, and, taking all things into account, is nothing below the rate of remuneration in other unskilled departments. And along with rising wages there is now the falling prices of stock looming in the distance; and this is sure to be the worst loss of all, unless we look well ahead, as we are trying to do, and prepare in time for the coming change. It would have been well for our arable farmers had they done this a few years ago, when corn was selling at war prices. They would have seen from the records of the past, that when the price got so very high it was sure to fall. If they had examined the state of Continental farming, as we have done, they would have been better prepared for that overwhelming flood of foreign grain which was so soon to deluge their markets, and bring down the prices, and plunge them into the hopeless abyss of poverty and ruin. We are all the better for being reminded of these dark days of our own history, for we are ever prone, in the bright sunshine of present success, to forget all the sad lessons of the past; and it is only by looking all the facts of the case sternly in the face that we can ever hope to escape from the coming return of the same sad disasters. But we must not despond; there are bright days yet in store for us all; and though the transition period is sure to be rather disheartening, if we only look well before us, and take care not to get into the same rash blunders as so many did in the last season of agricultural prosperity, then our case will not be so utterly hopeless as theirs was, when the present artificial state of things passes away, and the old dull times return.

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* The Scotch "stone" of 24lbs. is here referred to.

THE CORPORATION OF LONDON AND THE DEAD-MEAT TRADE.

The Corporation of London are evidently getting every day deeper and deeper into the swollen current of free-trade measures. To say that they have already got beyond their depth, and hence must either sink or swim with the tide, is only giving but a faint idea of their present peculiar predicament; for, in plain English, John Bull has come to the final determination that for the future they shall have nothing more to do with his "roast and boiled" than with his bread-and-butter, and that is simply no trade-tax on either, but free-trade in all. Hitherto everything edible coming from the country, the produce of the land, has been taxed enormously by the Corporation, so that it may truly be said—of course, figuratively speaking—that for a long time back farmers have been fleeced with as little ceremony as costermongers skin eels! So long as trade jogged on in the beaten track of the tilting times of Good Queen Bess, baronial castles and walled cities could well afford to play at "beggar my neighbour," as the eyes were a badge of honour in those days, and "black mail," a legitimate source of income; but free-trade has so changed the philosophy of life, public and private, that all members of the community, high and low, now-a-days, will have nothing less for their creed than to buy and sell when and where they may, upon a footing of common equality. In this march of improvement public markets have become old style, and are slowly being substituted by private systems of exchange, modern political economy having made the discovery that the old maxim "honesty is the best policy" may be more successfully reduced to practice without the intervention of civic authorities and their weights and measures, than with such old-fashioned means of fair dealing. So long as the public could not be trusted with the measuring and weighing of their goods, it was but reasonable, and even a matter of necessity, as the majority had nothing satisfactory wherewith to measure and weigh, that public functionaries should be appointed to determine the commercial value of quantities, and be paid for their labour "in toll and taxes." But all our national races, English, Scotch, and Irish, have now adopted common standards of weights and measures, and also learned how to use them to the confidence and satisfaction of each other; consequently, there is now no longer any reason or necessity to appeal to the weights and measures of the Guild functionary, while his interference has become intolerable, and his charges, toll, and taxes something worse. Modern science has even discovered a nearer way to fair-play and profit, in almost all branches of commerce, than the old circuitous road to and from the public markets. In short, the printing-press, the railway, and the telegraph are fast changing the whole commercial practice of the country—the abridgment directly and indirectly of time and space being the leading characteristic in this change from a public to a private system of trade—commercial transactions at the same time being more open than under the old public-market system.

Amongst the progressive changes thus taking place in the metropolis, the direct commerce of "dead meat" merits a special notice at the present time, owing on the one hand to the prevalence of rinderpest and other contagious diseases amongst cattle, coupled with the influence which such are exercising upon farming and the butcher trade; and on the other hand, to the fact that the Corporation of London is at the same time about to erect a costly dead-meat market on the old commercial plan, almost in the very centre of the British capital! Whether the contrast in which we have thus placed the subject of our paper is examined in a scientific or practical light, the conclusion appears all but manifest that the Corporation feel themselves under the necessity of helplessly adopting the old proverb of "they are far behind who dare not follow" for their line of action; for it cannot be that public men so high in the councils of commerce are so ignorant of their present position as their old plans of marketing prove them to be. From the losing speculation which the new cattle-market has proved itself to be, it was natural to hope that they would have profited by every pocket-touching foresight of this kind, relative to the progress of trade, so as to avoid a second loss in the erection of a dead-meat market at a time when the progress of trade had openly pronounced public markets to be the necessary instruments of a bygone age, but now out of date, and wholly unsuited for the more scientific and artificial circumstances of the present day.

The farmer being the producer and prior seller in the commercial transaction under investgation, his peculiar position at the present time demands the first consideration, and to him rinderpest, lung disease, and the other contagious maladies now prevalent, prove that public markets are only tolerable so long as they cannot be done without, but not a day longer, always excepting for the sale of inferior meat or cattle that cannot be sold at home. And the objection applies to public markets of every kind, viz., lean-stock markets, fat-stock markets, and dead-meat markets; for were the facts fully ascertained, contagion will, in all probability, be found to be more widely spread by people attending markets than by the cattle on sale; and the practical reason of this bespeaks its own conclusion, for the latter are individually almost exclusively confined in one place, whereas purchasers and drovers go handling and plodding through the whole of the market, as if purposely in search of contagion, to sow over the length and breadth of the country they traverse! A farmer or cattle-dealer may thus purchase a clean lot of store cattle free from rinderpest; he may take them home, tie them up in his stalls, or place them in his pastures, as the case may be, and afterwards spread contagion amongst them, which had been carried in his clothes or in the clothes of his servants or coat of his dog or horse. So little is yet known of the contagious matter of rinderpest, chemically or microscopically, that it may even be carried in the blood of persons, horses, dogs, &c., who inhale an infected atmosphere, and who hence must take the fomites of disease into their circulation; and, for aught that can be said to the contrary, they may afterwards excrete the same fomites from the pores of the skin, as active and contagious as ever. So long as markets exist for lean stock and fat stock, animals in the first stage of disease will be sent to them for conversion into money on any terms, and just as long will contagion be spread, as above, over the length and breadth of the land; and now that the great continental lines of railway that collect both store cattle and fat stock for our markets extend to the steppes of Russia, to which rinderpest is said to be indigenous, or ever-present, no system of veterinarian inspection or of slaughtering can be looked upon as a safe protection against imported disease, one way or another. In towns, again, salesmen, butchers, and drovers may spread the disease far and wide, not only amongst fat stock, but dairy-cows and lean stock, as salesmen, butchers, and dairymen are now many of them extensively connected with farming, in the adjoining counties. Again, it is an egregious mistake to suppose that dead meat does not carry and spread contagion, and therefore that slaughtering foreign cattle at the disembarking ports and dead-meat markets would be a protection; for the reverse of the former being true, the latter falls to the ground as fallacious. True, chemistry and the microscope have been unable to discover the poison of rinderpest in the flesh of diseased animals; but that is no proof that such flesh does not contain the contagious matter, for experience has long since proved that the dead carcase of an animal which has died of rinderpest, or which has been slaughtered, infects animals very rapidly—hence the reason why diseased bodies are buried in lime at a great depth the moment animals die or are slaughtered. And this is not more true of the last stage of the disease than of the first. Indeed, some suppose that every time the contagious matter acts it loses force; so that, according to this theory, a given number of fomites, or whatever the unit measure of the poison may be, would be more powerful in the first stage than in the last. But without going into the details of such a controversy, it is manifest that they are powerful and highly contagious in the first stage, as they very soon break up the system of the infected animal, the time between the first and last stages being often very short. Proper cooking may destroy the poison, but under-done meat may contain it in an active form; and before it is cooked at all enough harm may be done; so that if it passes through the body of man in an active form, or uninjured in its poisonous character, no one in the present state of knowledge can tell what injury may be done by the concentration of diseased meat in a dead-meat market, and the distribution of that meat, and the meat it contaminates, amongst dairymen and private families who own milch cows.

In the marketing of their produce again, farmers must, in accordance with the progress of things, provide for the fact that the thorough drainage of the country, with the other auxiliary improvements of modern agriculture, has greatly changed the climate; so much so, that exceptionary seasons like 1865 now closely resemble those in countries to which rinderpest is common, and where it is generated in the systems of cattle predisposed to it. The difference between a metropolitan climate of the present day and that when the Romans first landed in Britain is something considerable, and even between 1765 and 1865 as regards the marketing of cattle and dead meat in large towns, and also as regards the health of live stock in town and country. The proposition of making suitable provision for this difference is therefore one of necessity practically speaking, and this provision throws a greater task and responsibility upon farmers than perhaps is generally imagined; for, in the practical and scientific investigation of rinderpest, the facts of the case, so far as revealed by chemistry and the microscope, are more in favour of the proposition that rinderpest was generated in the Metropolis in the summer of 1865, than imported from the Continent. But whichever way future discovery in these and kindred branches of science may turn the trembling scales, one thing has already been satisfactorily determined—viz., that the common system of marketing cattle and dead meat in the Metropolis is neither suited to the present exigencies of farmers as the producers nor to the wants of the inhabitants of the capital as consumers. And as the present system has annually been growing worse and worse, owing to the more and more artificial state of stock-management and increase of mortality amongst cattle on the one hand, and the increase of population in the metropolis on the other hand, it follows that the present system will be still less suited for the wants of the future. The system, too, is one that cannot be improved upon, because based upon an erroneous principle—viz., the concentration of all sorts of cattle and all sorts of dead meat into one market, without regard to health and quality: so that in the former (the cattle market) diseased cattle infect healthy animals, thereby not only destroying the quality of their meat when slaughtered, but also spreading contagious diseases throughout herds and flocks in the country, as in the case of rinderpest in herds and small-pox in flocks last year; while, in the dead-meat market, unsound meat contaminates the sound, thereby reducing its commercial and intrinsic value. In the cattle market, and in the dead-meat market, there is no possible way, practically speaking, of keeping separate healthy cattle from diseased cattle, and sound meat from diseased meat, so as to avoid the heavy losses thus sustained by the producers of the primest quality. The inspection of live cattle and the inspection of dead meat has proved itself no protection to the spread of contagious diseases, much less to the contamination of quality due to the presence of putrid matter in a railway van and dead-meat market. Such then being the rotten state of the present trade in fat cattle and dead meat, we naturally come to the question as to the remedy which producers and consumers are in duty bound to provide in order to protect their respective interests; and that remedy is obviously the new butcher-trade proposition of getting the primest quality of meat directly from the producer, thereby avoiding the putrid precincts of the old concentration public dead-meat market. In other words, if the successful farmer produces the primest quality of meat, he should have a trade guarantee of the best price before he parts with it; and this quality the farmer should guarantee by slaughtering; and the system of commerce should further guarantee to the butcher the delivery of the meat in his shop undeteriorated in quality and value. And these three trade conditions the new system now being organized realises to the farmer and butcher. Much might be said in confirmation of the soundness of this conclusion; but to practical readers this is unnecessary, and therefore we pass on to the consumer's view of the subject, the preceding being the producer's.

The interest of the inhabitants of the metropolis is obviously identical with that of farmers as above, *i. e.*, to get a regular supply of the primest sorts of meat undeteriorated in quality by the putrefactive processes inseparably connected with the present system of public markets; and the duty of the Corporation of London is to make every commercial provision in its power to forward the practical realization of this important object. How does this tally with its present line of policy in the investment of extravagant sums of public money in the erection of public markets adapted to the practice of times long gone by? We can readily estimate the force of the practical arguments which may be advanced in reply to this, viz., "The trade as it at present exists must have a new dead-meat market, as proposed by the Corporation." Granted; but does the duty of the Corporation end here? Unquestionably not. On the contrary, their duty as public servants is to commence the great work of diverting the present trade of the public dead-meat market into the channel of the new private system almost as soon as the foundation of the new dead-meat market has been laid, if not before this important masonic ceremony has taken place. Like the whale in the tub, the Corporation may lash into foam the water in which it swims; but who, in modern times, cares for demonstrations of such an imposing character? No doubt it may yet fill the eyes of many a modern blue-frock to overflowing; but the prospects and progress of the new butcher-trade, although only as yet of an experimental character, are fast acquiring an impetus which will eventually carry all such offal to its natural *embouchure*; for so long as the interest and duty of producers and consumers are mutually one and the same, trade in dead meat will rectify and take care of itself, as trade in all other branches of commerce invariably does. In point of fact, however anomalous, and even suicidal, may be the conduct of the Corporation of London, and that of the great bulk of the butcher-trade, in upholding antiquated practices, the metropolitan trade in dead meat is nevertheless slowly rectifying itself, in a manner that already defies opposition. It will no doubt be said that "a few private individuals getting their meat from the provinces, and even from Paris, during the late high prices, as reported in the *Times* newspaper, with the ultimate view of starting a 'Limited Liability Butcher Trade,' and the private continuation of the experiment, with the object of testing thoroughly, over a given period of time, the practicability of getting a daily supply of slaughtered meat direct from the country, cannot as yet be considered an established trade"; but the objection falls to the ground, from the fact that an unlimited amount of trade could be commanded in the capital; so that under existing adverse circumstances, the highest degree of caution and prudence is necessary in the organization of a new system of commerce, involving so many important trade considerations as the one in question manifestly does. But such facts, instead of forming an objection, only increase the commercial responsibilities of the Corporation of London, and of those at present engaged in the metropolitan butcher-trade.

ENGINEER.

THE AGRICULTURAL IMPLEMENT TRADE IN CANADA.—The very high duties levied upon English agricultural machinery by the Canadian Government has almost entirely prevented its export to this important colony. The duties under the commercial treaty with the United States were so much lower that the Americans had a monopoly of the market. The leading makers of English agricultural machinery have recently memorialised the Colonial Office upon the subject of lower duties, setting forth the hardship of being practically shut out from one of our largest colonies, and the loss sustained by the colonists in being debarred the use of our improved implements. Mr. Cardwell has transmitted the memorial to the Governor of Canada for the consideration of the provincial government. English agricultural machinery is also by the high scale of duties imposed shut out of the United States, whilst England receives American reaping and other agricultural machinery duty free. It is understood that Mr. James Howard, the senior partner of the firm of J. and F. Howard of Bedford, who is about to visit America, will make some inquiries during his sojourn, and put directly to the American Government the concessions which should be granted.

THE NEW BUTCHER-TRADE, AND ITS ADVANTAGES.

Of the many advantages which farmers and the inhabitants of large towns will derive by butchers getting their daily supplies of meat newly-slaughtered and fresh as they require it directly from the provinces, as is now beginning to be done in the capital, the following three may be considered the principal, viz.:—1. The superior quality of the meat; 2, the economy of time, labour, and capital invested; and, 3, the sanitary improvement consequent on getting rid of the offal of town-slaughtered animals and the concentration of large quantities of dead meat of an inferior quality in large central markets—meat, much of which is always undergoing decomposition, and hence giving off gases of a highly deleterious character. The value of such advantages to farmers and butchers, the two parties more immediately engaged in the trade, will be best understood by contrasting the new system with the old, the one yet generally in operation. In doing so there will, no doubt, be found many sensible practical men in both professions, farmers as well as butchers, who will experience some difficulty in the outset in making fair comparisons, owing to their minds being naturally biassed in favour of the latter, the practice they now pursue; but such men must nevertheless always bear in mind that their own experience and peculiar views of the subject will not in the slightest degree interfere with those farmers and butchers who are successfully and advantageously pursuing the new direct practice, as it may technically be termed. On the contrary, their fears and prejudices, coupled with the working of the new system, will have the very opposite effect; for the longer they delay in adopting the improved practice of getting newly-slaughtered meat of the best quality fresh from the pure air of the country daily, the better it will be for those who have already adopted it, as this delay will enable the latter to extend their sphere of business. It will not require much practical reasoning to show how forcibly this applies to the case of the farmer as it does to that of the butcher, even under existing circumstances, which must be considered as forming part of the details of the old system—details not well adapted for the new one—while it will be still more easy to prove that the improvements in stock management and in the railway and steamboat conveyance of dead meat now in rapid progress will be greatly more in favour of the direct practice than the old indirect roundabout system. In other words, the details of the new practice are not in a sufficiently matured state as yet to enable a large number of farmers and butchers to put a practical estimate upon its merits in comparison with the merits of the practice they now pursue; for although they may have a long and successful experience of the latter, they have none of the former, strictly speaking, and therefore their more prudent course is to exercise a higher degree of caution and discrimination than too many of them now appear disposed to do; otherwise they may allow the world to go past them in the race of improvement so far as to render it impossible in the vast majority of examples for either farmers or butchers to regain the ground which they may thus lose, or perhaps what they are now losing.

There is at present a keen rivalry in all branches of industry, competition, in many instances, being carried to a hap-hazardous degree of speculation. This perhaps applies with greater force to the various occupations carried on in towns than to farming. This may be granted; but it does not follow that there is therefore no competition in farming, for, of late years, the very reverse of this has been experienced. True enough, if a farmer, Mr. A, occupies five hundred acres of land, his more successful rival and neighbour, Mr. B, adjoining, does not take his broad acres from him, although by new systems of cultivation and manuring, and of managing cattle, he may double the marketable produce of his own farm. If, for the sake of brevity and perspicuity, we confine our subsequent observations to the two occupations at issue, viz., farming and butchering, farmers will be found to have some little advantage in this respect over butchers; for Mr. A, by adopting Mr. B's practice, which he is always at liberty to do if he has the will, means, and professional ability, may likewise double the produce of his farm. Whereas, if one butcher, Mr. C, allows his neighbour, Mr. D, to double his business, the chances are ten to one that he loses some of his best customers, or perhaps the big half of his trade. Now, in this case, although Mr. C, when he finds himself getting fast in the background, may adopt the new system of his rival, Mr. D, he will nevertheless experience some difficulty in regaining his former customers or new ones for them. But although Mr. A has thus a slight advantage over Mr. C in the adoption of improvements, so as to regain lost ground, by being able to retain his broad acres of land, yet if he does not so adopt Mr. B's improvements, or some equivalent improved practice, he is as certain eventually to "die out" as is Mr. C, who loses the half of his trade. The end of such a farmer may even be worse than that of the parallel case of the butcher, more especially in reference to the future. At all events, the more prudent and advisable course for both farmers and butchers to follow at present is to keep pace with the times in the details of their respective occupations.

Of the superior quality of country-slaughtered meat, in comparison with town-slaughtered meat, consumers will soon settle that question to their own satisfaction. Practically speaking, farmers and butchers who think otherwise would do well to keep their opinions to themselves, for there cannot eventually be two opinions on the subject; and that the opinion of the public will carry the day, is a proposition too self-evident to admit of a formal proof. Their duty and interest is, to produce and supply the public with a vastly superior article to what they now do. Of this there cannot be a doubt; for the day is too far gone for the public to be told by them and a host of intermediate jobbers, including cattle-market bankers, salesmen, and owners of cattle-markets and dead-meat markets, with their officials, that the present system of marketing improves the quality of their beef and mutton. Far behind as the great body of consumers yet may be in chemistry and physiology, in comparing the advances which they have recently made in these sciences with the untrod ground that lies before them, they have nevertheless attained to a degree of practical knowledge sufficient to establish the contrary doctrine—that the present system of marketing greatly depreciates the quality of meat, reducing at the same time the quantity sent to market for consumption; while they are equally satisfied, from recent experiments made, that a better article, and more of it, can be grown from the produce of the land, the common food of cattle. Such are, in the estimation of the consuming public, established data in the above two branches of science, chemistry and physiology; and therefore the conduct of farmers and butchers who advocate the contrary doctrine must eventually prove suicidal to themselves in a business sense, however different may be their opinionative conclusions in the meantime.

There is no rule in trade that is based upon a more permanent foundation than that people in all branches of commerce must attend with fidelity to the wants of their customers, otherwise the latter will give their orders to those who do so. And this is not all, for the orders of customers must not only be attended to with punctuality, but with a degree of willingness and good faith, as much as to say that buyer and seller are of one mind on all points in the transaction. And this is perhaps more particularly the case with the quality of the daily necessaries of life; for if a consumer cannot get at one shop what suits him, he will straightway go to another where the desired quality is to be had, and there continue his orders for the future. Such details in trade are so common-place and self-evident in character, that it is almost superfluous to do more than allude to them. In a country village, where there may be but one butcher, he may get rid of second-rate meat to a first-rate customer for a time; but the latter will not be played upon in this manner a second time, and seldom for once without an apology. But in large towns like the metropolis it would be professionally suicidal on the part of any respectable butcher sending to a regular customer an article contrary to order; for such an article would unhesitatingly be returned, and the order instanter given to another butcher. And this is equally true whether the butcher has what is termed a family trade or sells over the counter to "comers and goers" for ready money, for in the latter case buyers only frequent those shops where they find the quality to suit.

It follows therefore, in applying the above commercial data to the question under consideration, that if a customer or a family orders country-slaughtered meat on the new plan, the butcher must either supply the order or lose trade. A family may show some degree of unwillingness to leave a respectable butcher by whom they have long been faithfully served, and therefore they may continue to give him part of their custom for a time, in the hopes he will take to the new system; but, if he does not, their orders for country-slaughtered meat on the new plan will increase, while those for town-slaughtered will decrease, so that the old butcher will be eventually hitched over the tail as the new butcher gets into the saddle. The practical conclusion is thus self-evident.

Producers or farmers will thus perceive how the orders of consumers for country-slaughtered meat on the new plan will affect them, and the trade in beef and mutton generally. And to beef and mutton we may add pork, milk, butter, cheese, eggs, poultry, rabbits, and game, where they are to be had, as improvements in the marketing economy of all these products of the land are now being rapidly matured for general practice. But at present we shall confine our observations to the former two—beef and mutton—and to the metropolis as the place of consumption. Thus, as the inhabitants of the capital increase their orders for country-slaughtered beef and mutton directly up from the provinces by through trains, butchers, or rather their agents and partners in the provinces, will increase their purchases of fat stock or dead meat at their farms or pastures, as the case may be. In point of fact, the new plan is already in successful operation, with a rapidly increasing demand on the provinces; but as yet the mode of slaughtering fat stock and of conveying carcasses to the metropolis is very imperfect, being on the old plan, so that until the whole project is fully matured by those at its head, it would be unfair to criticise many of its details, as they belong to the old system, and hence are, as it were, illegitimate members, which will very soon, we hope, be got rid off. Suffice it to say, at present, that the thin edge of the commercial wedge is fairly entered, and the reader may depend upon it that the chops and steaks are so palatable that the steam-hammer of the consumer will be kept going effectively until the old system, with all its indescribable *etceteras*, is fairly overthrown, and the new one permanently established.

The effect which the new system is exercising and will exercise upon the trade generally merits a special notice, as all the primest quality of beef and mutton is being picked up by the country purchasers of town butchers—a practice which will in the course of a little time greatly depreciate the quality of meat sold under the old system. As yet the effect produced in this respect is so limited in extent, as hardly to be felt by old-trade butchers and their customers; but when once the new system has been extended over the whole of the home provinces, and over most of the Continental states, it will be otherwise, for then the whole of the primest qualities being drafted out for the new trade, the remainder left for the old trade will be of so depreciated a character that we shall not attempt to describe its true condition; for, if old-school producers and consumers have reason to grumble at present—the former at the low prices, and the latter at the still lower standard of quality—as they doubtless both have, they will unquestionably have each ten-fold reason to grumble when the public live and dead meat markets are minus the primest qualities now exhibited for sale. On this there cannot be two questions raised. And here we may remind the superficial observer of the progress of fact in trade, that the fattest, sleekest, and best-looking animals, popularly speaking, do not always yield the primest quality of meat. The public palate, which is evidently at the head of this new movement, does not care a fig for sleek, symmetrical appearances, which are generally produced by an excess of fat and gelatinous tissue; for rich lean meat is what the public prefers, and what it is determined to have, cost what it may. Our present limits prevent us from going into the details of this peculiar head of our subject. All we can further add is that the turn in the trade in the above respect relative to quality of meat is likely to give a death-blow to the forcing, early-maturity, obese system now so fashionable in the eyes of perhaps the majority of producers; while it will increase the value of some of our best old breeds, such as the Scotch-polled and Highland cattle.

We now come to the second head of our subject, which has reference to the greater economy of time, labour, and capital under the new system than under the old. Generally speaking, something approximating to half the time and labour now spent will be saved in the commercial department of the work. There will also be a great saving of capital invested in individual slaughter-houses, as ground-rents and workmanship are cheaper in the country than in town; but upon the whole, in this, as in most other improvements, more capital will be required in the mechanical department of the project; but the money, nevertheless, will be more profitably invested under the new system than it is now invested under the old. It is hardly worth while going into details to account for this, as the immense saving in the quantity and quality of meat will do much more than cover the extra capital invested in improved slaughtering-houses, common-road and railway carcase-vans, together with the proper ventilation, disinfecting, and cooling of steamboats for the sea-and-river conveyance of dead meat. These are all questions of easy practical solution to engineers versant with the different mechanical branches of the subject.

Our last topic for consideration embraces the sanitary advantages which towns will derive from the new system of trade in dead meat, owing to the absence of offal, the removal of the unhealthy trades to which offal at present gives rise, and the virtual prohibition of unsound meat and the concentration of putrid gases in central markets, &c. No doubt such a desideratum is a work of some considerable time, for so long as obesity and its opposite prevail in the provinces to the extent they now do, the inferior meat thus produced must be got rid of, at some price, amongst the lowest of the low in large towns; but in the more wealthy and fashionable parts of towns the sanitary effect produced by the new system will be immediately felt, as nothing but the finest quality of meat will be bought in them—meat blooming fresh from the provinces daily. This is so manifest as to render detail unnecessary; and besides the horrible amount of putrid filth thus got rid of immediately in the more aristocratic parts of the metropolis and of our other large towns, the ground now occupied by slaughter-houses and yards would bring in an immense revenue annually when built upon, as it would shortly be, so that the present prodigal and pestilential system will ultimately be converted into its opposite—one big with blessings, including an increase of trade to farmers and butchers.

Such are the chief advantages which the metropolis and our other large towns would derive by butchers getting their daily supplies of meat fresh in from the country directly from the farmer, instead of from cattle markets and dead-meat markets, as at present. It has been popularly termed "sending the butcher to the ox," instead of "sending the ox to the butcher," according to the present practice. But this popular idea is faulty; for, in principle, the butcher under the new practice remains in the country with the ox. The true idea, therefore, of the new system is a subdivision of labour on scientific principles. Instead of attending the cattle market and dead-meat market as at present, butchers, for example, employ agents or travellers in the provinces, who forward orders directly, as in other well-organized branches of commerce of a similar character—such as corn, wool, flax, &c. The foundation, therefore, of this new practice rests on sound principles, which cannot be overthrown, and this fact commends it to the timely consideration of all parties interested.

AGRICULTURAL IMPLEMENTS.—The value of the agricultural implements exported from the United Kingdom, in 1865, was £209,879. In 1864, the corresponding total was £180,029; in 1863, £186,360; in 1862, £195,039; in 1861, £247,067; in 1860, £254,481; in 1859, £192,661; in 1858, £190,261; in 1857, £190,868; in 1856, £154,993; in 1855, £112,301; in 1854, £116,338; in 1853, £77,379; in 1852, £59,241; and in 1851, £58,655.

PROGRESS OF THE REPEAL OF THE MALT-TAX AGITATION.

The malt-tax question may now be said to have assumed a new phase. When the Central Anti-Malt-tax Association first entered upon its arduous task some three or four years ago, the repealers were met with the assertion that it was ridiculous to expect the abolition of the malt-tax, as that tax was so prolific in its results to the revenue that no Minister would ever consent to give it up, and that, indeed, he could not afford to lose it. In fact, the suggestion of the repeal of the duty upon malt was openly met by a declaration in certain quarters that the only alternative in such a case was to impose a large addition to the income-tax. Those who were amongst the repealers some ten or more years ago, can well remember that the movement at that time was deliberately discouraged and put down by some of the leaders of the country party upon that very ground. From that time an impression has very currently prevailed that the repeal of the malt-tax must be compensated by an increased income-tax, and this will account in a great measure for the backwardness of the so-called "Farmers' friends," in responding to the appeal made to them to join the Anti-Malt-tax Agitation. But the repealers were determined not to accept this view of the case, and having themselves no belief in the necessity of any such arrangement, they set to work to advocate the abolition of the malt-tax upon its own merits. They resolved to commence their crusade by a direct attack—to show the severe pressure and injustice of the impost—to expose its mischievous operation in unduly and artificially enhancing the cost of the national beverage—its interference with the course and the processes of agriculture—and its flagrant violation of one great maxim of political economy, in the imposition of a heavy duty upon a raw material of manufacture at the point of production instead of at, or near, the point of consumption. Their task was in one sense by no means an easy one. No Finance Minister is disposed to lessen his grasp of a tax producing an annual five or six millions sterling to the revenue. The plea that the money could not be spared was always ready to hand, and was implicitly credited by the public; while the fact that the masses scarcely knew that the tax on malt had anything to do with the price of beer, rendered them utterly indifferent to the agitation. County Members shrugged their shoulders and looked incredulous when their constituents spoke of the injustice and injury to agriculture inflicted by the tax, and landowners sought to stave off the question by the assurance that the farmers would reap no benefit from its aboliton, that heavier rents for barley land would be the consequence, that foreign malt would swamp their best markets, and that the tax, which was practically on beer, was the only engine by which the working town populations—the masses—could be made to contribute their share to the general taxation. The malt-tax, they declared, supplied the only means of getting at the working-man's pocket. These were the arguments used by the opponents of malt-tax repeal. Let those who have watched the course of events in reference to the malt-tax agitation say whether or no this is not a literally and strictly true description of affairs.

Well, the repealers did not permit themselves to be discouraged. They appealed to the country, they appealed to the Minister, they appealed to the Parliament. They laid bare the oppression of the tax, and declined to admit the plea that a great injustice and a palpable economical blunder should be perpetuated because of the enormous amount thereby accruing to the revenue. They refused to believe that the tax could only be abolished by substituting an augmented income-tax, and they firmly and resolutely demanded that the principles and policy adopted during recent years in setting free the springs of manufacturing and commercial industry—principles applied with such pre-eminent and astonishing success—should be extended in the case of a most important agricultural product. Their perseverance was in one sense rewarded. The Chancellor of the Exchequer gave a practical admission of the unjust and unwise operation of the tax in limiting the use of malt for the food of cattle, and drove the first nail in the coffin of the malt-tax by passing his well-known, futile, and much-ridiculed measure, the Malt Cattle-feeding Bill. The Central Association accepted this homœopathic instalment of justice as a direct confession of the truth of the indictment against the malt-tax. They continued to besiege the Chancellor of the Exchequer in Downing-street—to open the eyes of the people by public gatherings, by the establishment of district associations throughout the country, by pouring petitions into the House of Commons, and by following up that course by forcing on a discussion of the malt-tax question in Parliament. Mr. Gladstone had, as already stated, made one practical admission of the evils of the tax, and he last session took a further step in the same direction by producing his Malt-by-Weight Bill. But, nevertheless, not satisfied with the usual plea that the money could not be spared for the repeal of the tax, and with a direct refusal to grant the claim advanced, he was at the pains to go out of his way to defend the impost. The repealers, still confident as ever in the justice of their cause, returned to the attack this year, and although they were again met by the old excuse—the want of money, Mr. Gladstone nevertheless showed that the representations so persistently made to him had not been without their effect. The right honourable gentleman advanced to a fresh, a further, and very important admission. He admitted the principle so frequently laid down in these columns—viz., that it was a fundamental error to impose taxes at the point of production instead of at the point of consumption. Thus he said: "I admit that as an abstract argument it would be better to tax beer, as being a manufactured article, than malt, a raw material." Further, Mr. Gladstone not only did *not* go out of his way to defend the malt-tax (as he did in 1865); on the contrary he exhibited a very different disposition, and closed his remarks to the deputation with these significant words: "With regard to the question itself, I hold no opinion that is not subject to correction, and I, am most willing that by free discussion any error in my opinions on the subject should be removed. It will be our duty, as a Government, to give the utmost consideration to a question of so much importance."

We stop at this point, in order, as it were, to take stock of the advance made in the consideration of the repeal of the malt-tax since the labours of the Central Association commenced; and we hold that its members are fully entitled to congratulate themselves most heartily upon the progress achieved. It is no slight matter to have brought such a man as the present Chancellor "to book" on three different occasions and on three different points in reference to a source of revenue of such magnitude and importance as the malt-tax. When such a man admits openly and unreservedly that an impost is levied in direct and palpable violation of one of the soundest principles of taxation—when he admits that it is laid on at the wrong time, the wrong point, and on the wrong commodity, it is impossible to doubt that the day must be fast approaching when the conviction thus forced upon his mind will exhibit itself in a substantial measure of practical relief. We say, then, that the malt-tax repealers have no sort of reason for discouragement. On the contrary, we believe that the haven, though not yet reached, is already in sight, and that they have only to persevere in the one straight course, and to return again and again with redoubled vigour to the charge to accomplish their object. On the subject of a beer duty we have commented at length in another article in these columns, and we need not therefore enlarge upon that question here. Our aim now is to impress upon the malt-tax repealers throughout the kingdom that their labours have already borne good fruit, and that they have substantial ground for looking forward with sanguine hope to the future. It is impossible that any impost can continue long to survive the damaging admissions which its defenders have been compelled to make in regard to it. When those admissions were once registered, it was obvious that "Humpty Dumpty," as personated by the malt-tax, had "got a great fall," and that neither Mr. Gladstone, nor a score of Mr. Gladstones—in a word, not "all the Queen's horses nor all the Queen's men" would ever be able permanently to "set Humpty Dumpty up again." Whether he will recover so far as to be mounted astride on the beer barrel is another matter, but as regards the malt-house we trust his hours are numbered.—*The Anti-Malt-tax Circular for June.*

THE GROWTH OF HOPS.

At a meeting of the Maidstone Farmers' Club, lately held, the president of the Club, Mr. G. C. Whittaker in the chair, Mr. **Troutbeck** read his paper on "The Hop." He said: In introducing the subject to your notice I shall merely give you an outline of what has come under my own observation during the nine years' experience spent amongst you, and if I can by so doing provoke a discussion, we may naturally conclude and expect some wisdom may issue from such a multitude of counsellors, and that by rubbing our ideas together we may be able to arrive at a satisfactory solution of the problem. The district to which this discussion more immediately refers, being intersected by the South-Eastern Railway and the river Medway, is one of great interest. The dryness and earliness of its climate, the richness of its soil, and the heavy crops which, in favourable seasons and with skilful management, are obtained, render it replete with interest to the lover of agricultural progress, for it abounds with instances of successful and remunerative farm management; and, in coming to the subject chosen for discussion—the hop—several important points may be noticed and dwelt upon, which I trust will meet the consideration of some of the most extensive and successful cultivators among the members of our Club. Permit me to put for your consideration the following questions:—1. What are the characters of a good hop soil? 2. What are the physical characters of good and bad hop soils, more especially with reference to texture, depth, and drainage? 3. What is the character of the subsoil, and how near does it come to the surface? 4. Do all good hop soils contain much lime or not? 5. Are good hop soils noted for a larger proportion of phosphoric acid than is usually found in other soils? 6. What is the composition of good hop soils? 7. What is the composition of bad hop soils? 8. Is there a want of lime in them? Are they deficient in phosphoric acid or alkalies? 9. What is the composition of the subsoil of good and bad hop land? 10. What are the most important parts to be attended to in manuring and cultivation? These are a few points which I believe to be important. I will only dwell shortly upon a few of them, feeling there are members of our Club who can throw more light upon them than my short experience will permit me to do, and I will not occupy your time. In looking at the analysis of the hop we may safely conclude it is one of our most exhausting cultivated plants, both in respect to the organic and mineral constituents which it extracts from the soil, and from the high farming required even in our best hop soils, it is proved to be; and when agricultural chemistry has informed us from analysis of the mineral ingredients of the hop, given in the *Journal of the Royal Agricultural Society*, we are forcibly struck with the largeness of phosphoric acid and potash which is received from the soil, as well as nitrogen, we naturally conclude the most fertile soils should be chosen for its cultivation. Looking at the different districts of country, and the relation between the soil and rock it rests upon, which is shown by geology, we find they are almost exclusively confined to the strata existing between the chalk and oolite series. Of these series we have first chalk marl, green sand, weald clay, and iron sand. The chalk marl affords rich arable land, the marls have been used as dressings to land, and with great success. The reason of this may perhaps be found not only in the thin seams of coprolitic masses, but from its containing phosphate of lime diffused through its mass. The analysis of various specimens have demonstrated the presence of one to five per cent. of phosphoric acid, whilst the coprolite contain equal to about 45 per cent. of bone phosphate. *Green Sand.*—This formation is one of the most important, and certainly one of the most valuable to the hop grower, between the oolite and chalk, both from its mass and number of its organic remains. It is this formation on which our best hop grounds rest, and in this district we have it in alternating beds with nodules of limestone over Kentish rag, and also inclining to clay, especially towards its base, where it passes into the Wealden group. The soils upon this formation are generally above the average quality. The general fertility is mainly due to the richness of organic remains. They vary a good deal in reference to texture, depth, and drainage—sometimes rich friable loams, sometimes exceedingly stiff calcareous loams on a clay bottom, difficult to work; but when well drained and well cultivated, this soil ranks amongst the finest in this or any other country. I have before me a sample of a good hop soil, with the analysis which has been lent me by Dr. Voelcker. This soil is taken from a hop garden near Farnham, a district where the quality of the hop is well known. I have much pleasure in giving this statement, coupling with it the high authority of Dr. Voelcker, who gave the analysis of the soil. We find it contains—

Moisture	... 5.43
Organic matter and water of combination	... 8.57
Phosphoric acid...	... 7.37
Oxide of iron and alumina	...15.84
Carbonate of lime and a little silicate of lime...	15.89
Lime	... 5.17
Magnesium	... 0.57
Sand	...46.16
	100.

These particulars give us the information that a good hop soil, as well as being rich in phosphoric acid and potash, must also contain a fair proportion of lime. I believe it is the richness of our soils in these three ingredients which constitute their fitness for the successful growth of hops; and in looking through the hop grounds of this district, we may see how plainly analytical chemistry harmonises with the judgment of those who have gone before us in the correct selection of the land; and although the information on the composition of the soil of different parishes immediately around us is very much confined, I have no doubt the high character of some of ou hop grounds could, by an analysis of the soil and subsoil, b traced to be mainly due to the remarkable richness in phos phoric acid, potash, and lime, combining a favourable aspect sheltered from the north, north-east, and south-west wind and good natural drainage, whilst our inferior hop lands wil be found deficient, especially in phosphoric acid. On th *Wealden Clay*, which is exhibited in our district on the larges scale in the Weald of Kent, the land is generally tenaciou resting upon beds of various qualities, from a dark tenaciou clay to a grey calcareous marl of a friable texture. I have no got anything more than an approximate analysis of clay soil which show a large proportion of alumina and potash; an from the analysis I made some ten years ago of clay soils Berkshire, Oxfordshire, and Gloucestershire, they are very d ficient in phosphates or phosphoric acids. One of the mo important features in heavy soils, rich in alumina or ferr ginous compounds, is their power to absolve ammonia fro the air. They are know to have a peculiar attraction for a monia, and they have the power of separating it from solutio in water. On our heavy soils clay has been shown to be th active substance in retaining manure; and our light soils th are sandy and gravelly not possessing sufficient clay, these a expected to be less retentive of manure. Soils of this descri tion are said not to hold manure; on such soils it must b applied more frequently, and in smaller quantities than st soils, where, owing to the retentive power of clay, the manu of several crops may be safely deposited. I believe the mo important feature, and actually required in our heavy soi where natural drainage is defective, is efficient drainage of t land. We have many interesting confirmations of the adva tages from facts that may be gathered from the best-manag farms in the Weald of Kent. In the undrained land we fi the manure is carried off the surface into the water-course and when the land is drained the manure is preserved. It dissolved by rain in the upper strata, and becomes more pe fectly distributed and brought into contact with the active so below, and on these farms hops are cultivated with succe On our rich deep loams in the Weald of Kent, where I ha observed hops are found cultivated with success, much bene has been derived from thorough drainage, and by abunda stirring of the soil, the absorbing powers of which are greatly augmented by continual exposure to atmospheric influences. The last of these beds is *Iron Sand*, which abounds in the neighbourhood of Hastings, which is out of our district. I only know the soil is not celebrated for fertility. Looking, therefore, at the exhausting nature of the hop plant, the composition of the soil where it is produced in the finest qualities, and the position of the best ground about us, we may conclude a rich deep friable loam in this district, resting upon the upper chalk, and upon the out-cropping of the green sand, and the deep alluvial loams in our valleys, possessing a natural drainage, and yet retaining a high degree of tenacity for water, are the characters of the soil favourable for its production. It is highly necessary the soil should be rich in organic remains, and that the analytical constituents should resemble the hop itself. Coming to the cultivation of the hop, I do not wish to dogmatise as to the best way of treating or managing hop grounds in any particular form; that must be left to the owner, who must judge for himself, though principles or facts may be noticed or dwelt upon by more experienced members of our Club, both in regard to cultivation and application of manure. Whatever is worth doing at all is worth doing well, and I believe the first cost is generally the least, and in preparing land for growing hops my own experience has taught me that after selecting the land upon any of our farms the first and most important consideration is the drainage. My own observation on different farms has plainly shown that when land has not good natural drainage, it should be thoroughly drained; the depth of the drains and distance apart will be somewhat varied according to the soil and subsoil. On the majority of our lands I am not in favour of a less depth than four feet. On our heavy soils in the Weald of Kent, where they are stiff, adhesive, with power to retain moisture, the class which I have before observed have a great affinity for ammonia and property of retaining manure, we find them inclined to be cold, and sometimes expensive and difficult to prepare and cultivate, but, when properly cultivated, form some of our most fertile hop gardens in producing quantity. The faults are more confined to the mechanical structure than the want of the necessary ingredients required. On these soils I would certainly thoroughly trench, and attend as far as practicable to loosening and stirring the subsoil, and if I found drainage required I would run the mole plough diametrically in an opposite line to the line of the drains. In this and all other cases in preparing land for hops, I would avoid burying the surface soil; and as to how far it may be desirable to mix some of the subsoil with it depends upon circumstances. On our heavy lands we frequently find a deficiency of lime and phosphoric acid. In many cases I have seen most satisfactory results from applying a compost made of lime and vegetable mould, the cleansing of ditches and ponds, and fresh-burned lime, and I believe the addition of bone dust or half-inch bones would greatly add to increase the fertility of the soil and quality of the hop. There is little doubt the use of bulky manures are decidedly to be recommended, as well as to correct the mechanical structure of the soil, which is important. It is an important consideration, and one which rests much with landed proprietors, to give every improvement in the system of letting farms and the tenants security for unexhausted improvements, and it also rests with them to afford every accommodation to facilitate the production of the necessary manure which is required in every stage in the growth of the hop plant, both in organic and inorganic materials. It next remains with the tenant to practise such a system of cultivation as will afford him the greatest amount of profit for the capital employed in cultivation, and to assist him in so doing a knowledge of chemistry is absolutely necessary to till the soil to advantage. To illustrate this assertion, we may look at the practical results in our districts. We have the hop plant thriving for many years in some particular spots. Hops have been grown for years in succession, until at last they become worn out. We have most striking examples of this in several farms, when, after the plant had been grubbed, and the land brought into the usual rotation of crops in tillage, it has been restored, and the productive powers for the support of the plant have become impaired. I believe the falling off of the hop plant is mainly due, but not entirely, to the gradual extraction from the soil of a certain quantity of that inorganic matter upon which the plant thrives. The object of manuring is to restore the inorganic matter, and the object of chemical analysis is first to ascertain what substances are deficient in the soil, and next to supply them. It is also important for the hop grower, as well as the agriculturist in general, to be acquainted with the nature of the soil he cultivates as to the presence of any pernicious substance, that its effects may be counteracted, as well as to the supplying of any substance necessary for the growth of plants wanting in it. In the present state of chemical science I believe no certain system can be devised for improving lands independent of experiment; but there are few cases in which the labour of analytical researches will not be amply repaid by the certainty with which they denote the most practical and best methods of melioration. I presume, gentlemen, there was no one present engaged in the practice of agriculture but will admit the art is an imperfect one; and, speaking on behalf of scientific men, I can say that the principle upon which they gather knowledge, so far as science is concerned, is only on the threshold. The more they know the more they discover they do not know. Science and practice prosecute their inquiries tn the same manner. They are both founded on experience and upon the observation of facts, but to a certain extent different facts. We look at them from different points of view, and it is in this way that science can be of service to the practical man. In the present state of matters, when science and practice are prosecuting the same object from different points of view, they come in contact occasionally, and differences arise. Then the experienced and practical man is inclined to say science is wrong, and the scientific man is inclined to meet him with the counter-statement. Both statements are incorrect. Provided the facts are equally well observed, science and practice must be equally right; and even if they do not agree, the fact of their disagreement would prove that there was something at the bottom of all not yet known to us. A careful analysis of the soils we cultivate, and manure we use, is most valuable in many ways. It is most apparent in many instances. A useless expense in the application of unsuccessful manures would not be incurred if the soil was submitted to an able chemist for inspection and examination. An analysis to be of service must be made with great care and accuracy, as the most important of inorganic substances are found in small quantities. A knowledge, too, of the physical properties is of great importance to point out the manner in which various substances operate to promote or retard vegetable life, and also to show the necessity of giving to the soil a proper texture. The physical properties of soils which directly affect their fertility are—capability of retaining atmospheric moisture; power of containing water; capability of becoming dry on exposure to the air; capability of receiving solar influence; power of retaining heat, and absorption of oxygen from the atmosphere. Before any specific manure can be applied or laid down for the hop plant these properties must be ascertained, and the analyses of the soil—for soils possessing the same chemical elements and the same mineral constituents may be endowed with widely different properties in an agricultural point of view, according to the degree of division among their particles, and the looseness and firmness of texture resulting from their several modes of union. Therefore, coming to the subject of manure, which I have to bring under your notice, the first point we have to consider is—what is manure? This is a simple question, and yet one which involves a great many considerations. A manure is something we put to the soil to promote the growth of crops by supplying food to the plant, and the most typical manure—farmyard manure—is a substance which supplies to the crop what it requires. The hop plant (and indeed any plant) is a complex matter made up of a great variety of substances, made up of a portion which disappears in burning. For example, when we burn hop bine, and find the quantity of ash left behind, we are struck with the smallness of the quantity, for in every thousand parts we have not more than five parts remaining. It is despoiled of its organic matter. We are aware that the atmosphere is the great reservoir for the organic substances existing in old plants, and which they can always draw on to comparatively an unlimited extent. These substances exist in the air, while the substances which are found in a small quantity in the plant exist only in the soil, and can only be drawn from that source. When we turn our attention from the plant to the soil, we find that the substances most essential to the hop plant exist in the smallest proportion in the soil, viz., phosphoric acid, lime, and potash. If we direct our attention to any particular substance, as potash or phosphoric acid, and examine the composition of a fertile soil, we are impressed with the fact that what the plants require in a large proportion the soil only contains to a trifling extent, and the importance is at once forced upon us to supply those things which are deficient. In applying manure, our object is to obtain from the soil a larger quantity of produce than it would yield in a state of nature; and we are to obtain this larger produce partly by tillage, and partly by the use of suitable manures. Manure operates in supplying matters which the plant requires, as well as opening out the stores which exist in the soil, and places them in a condition available to it——the great reservoir of matters which only slowly becomes available in our fertile soils, the object being to encourage these changes, so that the plant can assimilate and take possession of them, and this is one of the most important functions of which farmyard manure is capable. Farmyard manure, made from hop bines, &c., is not only a source of food to the plant, but is one of those which opens up the storehouse of unavailable food. While it is undergoing decomposition, it is yielding certain substances capable of acting upon the soil, and of transferring from the unavailable to the available category—of putting in that condition in which the plant can absorb them—the matters of which it stands in need. I believe well-made and well-managed farmyard manure from fattening animals, when the hop-bine is employed in part as litter in this district, to be one of the best and most perfect manures, insomuch as it contains every individual substance which the plant requires; it is directly or indirectly the vegetable matter, restoring to the soil those very substances which have been removed from it; and hence it is that we may in many cases attribute, but not entirely, the success of many of our hop-growers. But farmyard manure has its defects, and one of them lies in the fact that the matters which it contains are not at once available to the crop. Take, for example, hop-bine—it contains all the constituents which the hop plant requires; but place it upon the soil as a manure, and we find the substances contained are locked up in a condition in which they are incapable of absorption, and before they can be available they must pass from a complex into a simple state by virtue of decomposition. What we want is not only to supply food to the crop, but to supply it in such a form as can be returned to us as rapidly as possible in the form of a crop; and in order to obtain such a result we must resort to the use of manures of the proper condition, which, in the case of farm-yard manure, is obtained by decomposition. The substances of the plant are rapidly brought into an available position, and which change is produced most actively when the dung is heaped up, and allowed to get hot, as in a dung-heap; and nothing accelerates the uniform decomposition more than putrid urine in liquid manure. Hence the advantage of a liquid manure tank in the neighbourhood of the manure pit. It not unfrequently happens decomposition is very much retarded by leaving manure in our yards, or spread over a large surface; indeed, we hear examples when it stops altogether, and then farm-yard manure is as useless and inert as anything can well be. There is doubtless a serious loss, and it is a loss which deserves serious attention, in the management of farm-yard manure in the drainage from manure in yards as well as that from manure heaps. It is to be looked upon with regret that streamlets of strongly-coloured water should run away from the dung heap; and the loss would be difficult to estimate. We have many striking illustrations in our hop gardens, when manure has been added in large quantity, and has become unavailable from another cause. For example, we conceive a soil which contains enough phosphoric acid to supply one hundred crops, and at the same time only contains enough to supply fifty crops. At the end of fifty crops the soil becomes absolutely sterile, as if it contained no valuable substance whatever, because the growth of the plant is dependent upon its obtaining all the substances it requires, and the absence of one of these is as fatal as the absence of all of these would be. Experience has shown us that while all the constituent parts of a plant are equally necessary—must all be present in the soil—it has also shown us that certain substances are more likely to become deficient in some soils than others, and that the one above all others likely to become exhausted is ammonia, hence the necessity of continuing to cultivate our hop soils with extraneous substances, and practice has established the importance of employing certain compounds rich in nitrogen and phosphoric acid. All our manures recently employed are to a greater or less extent supplies of ammonia and phosphoric acid, which form the composition of the two important fundamental classes of artificial manures, viz., phosphatic and nitrogenised. As far as my present experienc goes, phosphatic manures tend to promote the quality of th hop, but not quantity. Among the manures I will briefl enumerate fresh bones, bone dust, bones treated with sulphuri acid, phosphatic matter of Saldanha Bay guano and Patagoni guano. Animal matter of all descriptions, rape cake, farm-yar manure, London dung, &c., nitrogenised matter, such as wool blood, flesh, Peruvian guano, soot, woollen rags, shoddy, putri animal substances, horn shavings, glue refuse, dried blood, &c. are all very conducive to the growth of the hop plant. I poor sandy soils or thin porous soils, these preceding matter I believe should not be used alone, but in conjunction wit bone dust; or better still, dissolved bones, or accompanied wit a dressing of farm-yard manure. These are the great fundamental manures which are employed, and regard to the us of these substances, and the mode they are to be applied, ar matters which give rise to an immense amount of discussion; in fact if I were to enlarge upon this at the present moment I fear I should tire your patience. I will conclude by endeavouring to point out the general question, which arises out of the nature of these manures. The most important considerations are dependent upon the condition of the soil. If it is deficient in nitrogen, we know at once that ammonia must be applied, but the quantity and the manner in which the manure is to be added is to a great extent dependent upon the nature of the soil. The manure is put into the soil, and, according to its nature, is consumed with greater or less rapidity. On over-light lands, thin porous soils, we know manure lasts for a shorter time than it does in a heavier soil, and the reasons for this are—firstly, in an open soil to which the air has access, decomposition goes on with greater rapidity, and such soils have little power of retaining the decomposed matters. On the other hand, in our heavy soils decomposition is slow, but from the nature of the soil it retains the products of decomposition. Ready-formed ammonia, or ammoniacal salts, such as sulphate of ammonia, is a substance highly soluble in water, and I believe should not be used for hops; it is even dangerous to apply too much Peruvian guano, on account of the excess of ready-formed ammonia, of which it contains from 10 to 12 per cent. Experience has shown us that if we pour a solution of sulphate of ammonia upon a heavy soil, such as I have alluded to, it takes possession of the ammonia, retains it, stores it up in the condition in which it is available and useful to the plant. But if, in the place of our heavy soils, we pour the solution on clear sand, we find the water which passes through contains all the ammonia; and one the important features in applying manure to the hop plant, any other crop, is the power of the soil to retain the food farmer adds, as well as supplying it. We have many exam where ammoniacal manures, or any substances very sol and powerful, cause in wet weather a very vigorous grow which receives a sudden check in dry weather, and crop ripens unequally, the colour of the sample is inju and mould and fungi follow. All very soluble matters, h ever good as manure, must be applied in a very diluted st or else they do harm and are apt to produce disease. In ca where the hop-grower is compelled for any reason to use substance very soluble and powerful, I believe, where prac able, the best mode is to divide it into small quantities apply it at various times during the season. The applicat of any particular manure is a question very much of nature of the soil, and in many cases a mixture of b phosphatic and nitrogenised manures, varying according the condition of the soil, is to be recommended. In the c of our soils that are inclined to be light, or lands rich in p phate, like the Farnham soil, I would use sparingly of stances rich in ammonia. I would resort to a mixture wh although not containing much ammonia, is capable of lea it. I would use the following proportions: One-and-a- cwt. of dried blood, eight cwt. of shoddy, and a half cw Peruvian guano; or, five cwt. of rape-cake and five cwt. shoddy; or, three cwt. of rape-cake and three cwt. of d blood. On the other hand, on our soils inclined to be he in which decomposition is slow, lands which are deficient phosphate—such as is the case with land in the Weal Kent—I would use nitrogenised substances sparingly, resort to phosphate, which I believe should be made solu at least in part. Probably one of the following mixt would answer well, in the proportion of—three cwt. of sup phosphate of lime and two cwt. of dried blood; or, four c

bones (real bone-dust), treated with one-third of
acid; or, farm-yard manure and bines and bone-dust;
cwt. of superphospate and three cwt. of rape-dust.
plication of manure is a question, as I have said before,
very much upon the nature of the soil, and hence we
f we carry the matter still further, that in case of our
manures, such as bones, which contain only a small
of nitrogen and abundance of phosphates, operates;
experience has taught me that if we try to cultivate
a light soil we do not act wisely in using substances
mmonia, such as Peruvian guano. We find better
btained from the employment of other substances, such
or Bolivian guano, which contain a large quantity of
and a small quantity of ammonia. On the other
we have examples of hops being cultivated with success
heavy soils by means of Peruvian guano, whereas on
the manure is always thrown away. I do not say
of Peruvian guano is always the best practice on
but that the results got from its application to
heavy soils is better than on light soils. All
possess their constituents in a readily available
be applied to such crops as take their substances
rapidity. When the crop is actually growing
manures produce the best effects when applied
The application of farm-yard manures is a
which a variety of opinions exist in the minds
For hops I am strongly in favour of apply-
in a rotten state from our mixens. When it
to rot carefully, I recommend getting it into
heavy soils during autumn, more particularly
I believe it is the least loss.

PUNNETT said he rose for the purpose of asking
a vote of thanks to Mr. Troutbeck for his
on the cultivation of the hop. Mr. Trout-
the matter most ably, especially that portion
to the constituents of the different kinds of soil;
he was most decidedly right on the point when
different kinds of soils require different kinds of
Soils varied so much in their mechanical character
manures would not have the same effect. The
therefore most valuable. To imagine that this dis-
was found to possess a large quantity of phos-
was not the best kind of soil for the cultivation
was an absurdity. The subsoil was the same, and
the trouble he could see that the hop instead of
but five or six feet into the ground ran twenty
or sixty feet, showing that the plant had got into
it thoroughly understood and intended to make
Troutbeck's remarks were very admirable, as they
the peculiar qualities of the soils. The Ragstone
naturally what the hop plant would seek for in
It found there its food provided abundantly, and
there indigenous, with a given state of climate.
got into the Weald of Kent, the plant was not
it grew there only by means of cultivation. It
there the necessary ingredients of the soil in which
naturally grew, and to successfully cultivate it the
to place it in a position, by means of manure, to
it was originally found, and he did this by adding
that upon which the plant would grow naturally
The cultivation and the raising of the hop
was therefore an artificial and not a natural
Mr. Troutbeck talked of drainage being
he asked, was that? It was merely making
of the plant similar in that respect to the one in
the best; and after all, it only proved that the
who had created all things had provided that men
and beasts and birds, and each part of the vegetable
should be placed in the position best suited to them;
knew much better than we could ever hope to do
position in which the hop should be placed. He
believed that the Almighty never intended hops
in the Weald of Kent (Oh, oh); therefore
the requisite soil for them to grow upon.
of practice and experience, did manage to
which God in His great Providence never
Troutbeck's remarks certainly contained a
information, and they deserved a great deal of
was much in that paper which was valuable
He had therefore much pleasure in proposing a vote of thanks to Mr. Troutbeck for the able way in which he had brought the subject before them.

The resolution was seconded by Mr. MARSHALL.

Mr. KEMP said that the paper, which was a most able one, must enforce upon them all the necessity of a knowledge of chemistry in order to carry out their operations successfully. With regard to the remark that the Almighty never intended hops to grow in the Weald of Kent, he maintained that this was a mistake, for if it were so, God never would have allowed them to be grown there. If there were any deficiency in any part of the world, either in the matters required for man or beast, it was made up in some other way, or man by the exercise of his intellect was allowed to add to the soil the constituents necessary for the cultivation of any special plant. He thought a special vote of thanks should be tendered to Mr. Troutbeck, for they paid the compliment always to a professional lecturer; and when a gentleman of practical experience came forward and expended valuable time to give them information, he thought it ought to be most amply acknowledged.

The PRESIDENT (Mr. Whittaker) said he did not agree with the remarks of Mr. Punnett as to the growth of hops in the Weald, for it was a fact that where they grew here nine or ten cwt. to the acre, they grew fifteen cwt. down there.

The VICE-PRESIDENT (Mr. Hodsoll) said there was one matter which had not been referred to by Mr. Troutbeck—the introduction on old hop grounds of the male plant. It was a very peculiar thing, but it was found that upon old planted grounds, grounds which had existed for 150 or 200 years, the produce to some extent failed; but upon the introduction of the male plant to the extent of one to about 144 of the female, in the course of four or five years the ground was brought back to its former fertility. Mr. Rutley, who had obtained a prize for an essay upon hop cultivation, had proved this upon his own holding. He stated in his essay that he took a farm upon which there was an old Golding ground that was said to be worn out, and that he introduced the male plant to the extent of one to twelve square which was 144. The first year the pollen of the male plant was circulated to a certain distance only; the next year it extended still further, and in three or four years the crop was entirely renewed, and what was before an insignificant and small crop became in the course of six years as large and as good a crop as had ever been grown before. Having read this essay he (Mr. Hodson) had been induced to try the experiment. He held an old Golden ground which had been planted some 200 years, and since 1859 that ground had neither produced in quantity or quality what he had every reason to expect from it; and he therefore, last year, introduced 300 male plants into the ground at distances very much assimilating to that given in the essay. It remained to be seen what would be the result, but he had very great faith in the introduction. With regard to hop bines, he had never thought it an economical plan to burn them as some did. He had never done so but once, and he had resolved never to do it again. He had always either dug them in green or carried them into the yard, and after stacking them twelve months had returned them into the soil as manure. He believed with Mr. Troutbeck that they were a most valuable ingredient in making manure, and that in using them they returned to the soil the constituents which the plant itself had extracted.

The PRESIDENT said Mr. Hodsoll had remarked that he sometimes dug the bines in green, and sometimes put them into the yard after a year: which plan seemed to answer the best?

Mr. HODSOLL said he was not able to say this, as it was only last year that he dug them in green for the first time. He had experimented on about thirty acres, and the result remained to be proved.

Mr. BARLING said he wished to say one word upon Mr. Hodsoll's remarks. That gentleman had stated that Mr. Rutley had experimented on an old hop ground which was said to be worn out, but he did not say how long he had had the ground in his cultivation before the advantageous results were shown. Mr. Rutley had concluded that the introduction of the male plant had produced the alteration, when in all probability it arose from his improved cultivation. It was very possible that he had come to wrong conclusions. It was supposed by physiologists that the female plant of the hop had matter within itself sufficient for fecundation without having contact with the male plant; and it would not be strange if it should prove so, for it was well known that there were similar instances in animal life. The aphis—the hop planter's plague—was known to produce young for ten successive generations without having connection with the male being. There was one further remark. The lecturer had referred to the geological formations, and the great importance of a knowledge of the chemical constituents of the soil and its mechanical condition. In his (Mr. Barling's) opinion, the latter subject had not been dwelt upon enough. The clay was a stiff tenacious soil, while the sand possessed millions of pores. In the latter case oxygen could act freely in assisting and rendering soluble the manures applied, while in the former soil the same manures might without proper tillage remain inert and useless, owing entirely to the close character of the soil, and not at all to its chemical composition. In considering the mechanical condition of the soil they sought to obtain two things by tillage—moisture and temperature; and, therefore, they used the nidget, which, while it cut away the weeds, produced the right mechanical condition of the soil. It made the ground mellow, or what they termed "hover." Heat was a matter necessary to hops, and he (Mr. Barling) had for some time had a longing to go a step further. He thought not only should the ground be cultivated in this manner, but that some system of tillage should be introduced by which the oxygen of the air should be able to reach, not only just beneath the surface, but fairly into the soil. The object of such tillage was, that instead of the soil remaining hard and close, it should be rendered friable, so that the manures—those things for which they had paid money out of their pockets—should, in unison with a chemical element in the air (the oxygen) be converted into the food of plants. With regard to the matter of the hop-bine being put into the ground green, or converted into manure by means of the farmyard, if used green it would have to remain long enough in the ground to become soluble before it could be used by the plant. The valuable part of the bine as manure was evidently the leaf and its footstalk, which, if put into water, even when it was brown and dry, would be found to be a rich gelatinous substance. The study of the geology of this district was peculiarly interesting, the chief strata consisting of chalk, running from Rochester towards Lenham and Charing on one side, and from Rochester to Wrotham on the other, a bed of gault clay cropping out under the chalk hills, and the ragstone rising from under this clay and occupying the centre of the district, and terminating at the Sutton, Linton, Hunton, Peckham, and Ightham hills, where the Wealden clays and sands are at their base. It is in this ragstone district, rich in phosphoric matter, that the Golding hop is so largely cultivated, and where, taking the average of seasons, it succeeds the best. Mr. Troutbeck inferred that the presence of lime was necessary to the cultivation of hops. But lime has a strong attraction for a substance which we called carbonic acid, and which composed nine parts in twenty of its weight. No doubt there was considerable truth in the assertion that phosphoric acid is of great consequence to the hop. For in America those who cultivated hops do so on the strata which yields phosphoric acid. The presence of this is due to the same cause as that of the coprolites which the farmer buys in the market—the fossilised remains of fish, and even their undigested food, which, thousands of years before, they had gobbled up in the sea.

Mr. **Hodsoll** said he wished to make one remark in reply to Mr. Barling. He had suggested that the improvement in Mr. Rutley's hop ground was due to superior cultivation, and that Mr. Rutley had improved upon the bad farming of a former tenant. That was not the case with him (Mr. Hodsoll), for if there was anything wrong upon his part it was that of over-manuring. But Mr. Rutley's evidence upon the point was almost conclusive, for he stated that the first year after introducing the male hop plant an area around this plant became productive; the next year this area became greater, until in three or four years the produce had increased immensely in weight and quality. It took about three years for the male plant to attain its proper growth and strength so as to be able to impregnate with its pollen the hops surrounding it, but as soon as it did gain its full vigour the whole ground received benefit—therefore he (Mr. Hodsoll) thought the male plant necessary.

The **President** said he remembered very well that old Mr. Ellis—who was a capital grower of hops—always left a certain number of male plants; he thought it was one to a hundred.

Mr. **Barling** said when a hop had grown a hundred years his firm conviction was that it had grown long enough. The interior and heart of the root became absolutely rotten and worthless, and the only source of nourishment the plant received was from the worn out old bark which surrounded the crown of the root. He advised them to grub their old hops up as soon as they could. A favourable season acted to the old hop like warmth to an old man, and then these grounds might bear, but should an unfavourable season come the old grounds were the most liable to be attacked with blight and fly. He believed that after a time life would cease from age in the hop, as certain as it would cease in him.

The **Chairman** inquired how it was then that it had not ceased in the old Vine hills, and in Mr. Buckland's grounds?

Mr. **Hodsoll** said, following out Mr. Barling's idea, he had suggested to Mr. Peel the advisability of grubbing up the old grounds. His reply was, "God forbid that I should ever live to see it." (A Member—"He's an old man.")

Mr. **Barling** said they had only one object in view—the arriving at the truth as near as they could. He had taken the opinion of many well-known growers, who were of opinion that in eighteen or twenty years the fruit of the hop was as fine as it would be if the plant were a hundred years old, without the risk attending the old plant.

Mr. **Hodsoll** said it certainly was a fact that since 1859 he had had no crop worth having from his old ground, and he wanted to know the cause of it. He had applied plenty of manure. Mr. Peel told him to have patience, and the hops would come round again. The essay by Mr. Rutley, which he had mentioned, was in the club library, and could be had from the secretary.

Mr. W. H. **Marshall** said, as far as his experience went, the old grounds produced a superior hop to the younger ones. Every planter who had cultivated them was aware that the quality was very superior, but the yield was not great in quantity. There were grounds 200 years old, which grew hops of the very best quality possible. He therefore thought they should not condemn the old grounds while this was the case.

Mr. **Bridgland**, jun., said it was a well-known fact, however, that a ground three years old would produce a much larger quantity of hops than a ground 200 years old, and if this was the case, did any one believe that the old ground could stand the vicissitudes of seasons that the young ground could? With the difference in price, if the new ground grew 15 cwt. to the acre, and the old ground but 8, which, he asked, was the most advantageous?

Mr. **Buckland**, sen., said the produce of his old Bell ground was so well known in the Borough, that a factor told him on his extending his ground slightly, that he had detected the difference, and that he could put his finger on every hop produced from the old Bell ground. This proved the difference in the quality between old and new grounds.

The **Chairman** said he should like to ask Mr. Buckland whether as many hops were grown on the old Vine hills and on his old Bell grounds as on other grounds?

Mr. **Buckland** said quite as many.

The **Chairman** said that then was conclusive. One quality was worth £4 per cwt., and the other £8.

Mr. **Beard** inquired whether Mr. Buckland provided the male hop to make the female more prolific?

Mr. **Buckland** said he did not. All the male plants he found he grubbed up.

Mr. **Barling** said he contended that there was a period of life even to the hop, and that they would find in time that it was impolitic to rely on very old plants.

Mr. **Hayles** said he was of opinion that there was no planter in England who had a hill 200 years old. There was a story, they would remember, of an old woman, and a knife which had had ever so many new blades and ever so many new handles. That he believed to be the case with the old Golding grounds. The owners were constantly fetching out the dead hops and putting in new ones. He questioned whether on Mr. Buckland's famous grounds he had any hops years old.

Mr. **Buckland** said he had not renewed since 1832.

The **Chairman** said he wished to ask Mr. Barling one ques tion with regard to the decay of vegetable life. Some 30 o 40 years ago he had some apple-trees which had been grafte with a good kind of apple, and one year they all ceased bear ing and did not bear after. His neighbours told him the roo had got down to a soil that did not suit them. However, h had them grafted with another sort, which took well, and th trees recovered their fruitfulness. They were then grafte with another sort—the Goff—and they were now bearing well What in Mr. Barling's opinion was the cause of this?

Mr. **Barling** said no doubt the trees ceased bearing from the death of the parent tree. It was a well-known, but curious fact, that a seedling apple-tree may furnish grafts t other trees, and from these other grafts may be taken, and they may be removed from the parent tree hundreds or thou sands of miles, but as soon as the parent seedling tree died the other trees grafted from it or its descendant grafts woul fail, showing that the principle of life was not in the root, bu in the piece of bark and flesh of the tree taken for the purpos of grafting. There was no doubt there would come a tim when even the well-known Goff apple would die out, as th old tree was alive somewhere still.

Mr. **Troutbeck** then briefly replied to the vote of thanks He said that he only trusted that any deficiencies he had shown would be forgiven, for they would remember that his opportunities for gaining information on the subject during some years were small compared with the forty years' experience of Mr. Buckland, and the lengthened experience of other members of the club. His object had been to promote discussion, and in that he had succeeded, and had been much interested in what he had heard.

Mr. Kemp then suggested that the discussion should be adjourned, and that Mr. Barling should be requested to open it.

The President said this was a question for the committee, but he was sure that Mr. Barling, if he could afford information to the club, was always most anxious to do so.

The proceedings then terminated.

SPANISH AGRICULTURE.

Recent official details place us in possession of some valuable statistics respecting Spanish agriculture, which appears to be prosperous in most districts, and especially in Andalusia. The direct tax levied on real property, on agricultural produce, and on cattle has doubled there during the last twenty years; while it has nearly doubled throughout the whole of Spain, and in the Madrid lists stands as follows: In 1846 to 1848 it amounted to £[illegible],000, in 1864 to 1866 to £4,800,000. Passing over the production of wine, the exports of which to England seem to have been less in 1865 owing to the excessive shipments of the previous year, we may incidentally allude to Spanish grain and cattle.

The Spanish Government, a few months ago, proposed to the Cortes to admit all kinds of foreign corn on payment of a moderate duty. Hitherto the importation of corn was prohibited except when the price of wheat should reach £3 10s. per quarter; and the result has been that there is often a difference in price between the central corn-growing districts and the northern seaboard of from 30s. to 40s. per quarter. The duties proposed were, wheat 11s. 6d. per quarter, maize 10s., barley 6s. 6d., rye 6s., oats 2s. 6d., and flour 3s. 10d. per cwt.; but the proposition at present meets with considerable opposition. The following extreme range of prices shows how necessary it is to admit grain from abroad. The British consul gives the rates, in March last, at 24s. per quarter for wheat at Sepulved, in the province of Segovia, Old Castile, and 80s. per quarter at the seaport of Pravia (Asturias); showing a difference of 56s. per quarter between the maximum and minimum. Again, in the inland provinces of Burgos, Segovia, Soria and Saragossa, the average price was below 30s. per qr., whilst in those of Alicante, Barcelona, Cadiz, Malaga and Pontuadra, all of which border on the sea, the price exceeds 50s. per quarter. The maximum price of barley was 42s. per quarter in the maritime province of Oviedo (Asturias), and the minimum 11s. 9d. per quarter in the inland province of Saragossa.

As to the cattle-plague, there being no importation to speak of from other countries of sheep or cattle, it is probable that Spain will escape. A clever article appeared lately in a Seville paper on the origin of the rinderpest, and its effects. It attributed the original disease in the Russian Steppes to starvation and poisonous inoculation by flies from the putrid bodies of the dead (starved) cattle—in Germany to the filthy state in which cattle are kept there, to stall-feeding and over-working, and to permitting the cattle to feed on decayed refuse of vegetables—in England to over-care and over-feeding, producing a habit of body which predisposes to infection of every kind, and to the rich food of English pastures reeking with animal manure. These worthy Spaniards may be mistaken in this, and may set too much value on simple unstimulated pasture and food for cattle; but perhaps they may be right up to a certain point. Were the rinderpest to reach Spain, it would probably sweep away the most of the cattle. There would be a great deal of talking; and local boards, each with its own views, would make stringent laws and regulations, many of them judicious; but the peasants would not obey them, and there would be no system in carrying them out.

The system of cattle-rearing in Spain is conducted on two plans—one in which the cattle are left out all the year round, and the other in which they are housed half the year. The large herds of cows in the south of Spain destined for breeding are kept on the first plan: they are never sheltered, live continually on the pasture-grounds, and no food is ever provided for them. If there be enough for them to graze on, they live; if not, they die. To a certain extent this open-air system is followed in the Castiles, La Manches, Arragon, and Navarre; whilst in the Asturias, Gallicia, and part of Catalonia, where land and landed property are much divided and subdivided, and where the climate is sometimes very cold, this system would not do at all, and is not practised. Most of the cattle in Spain are, however, born under the wilder system of perpetual open-air pasturage. The second system is brought to most perfection in the provinces of Gallicia and the Asturias, where they are housed, groomed, and even clothed in winter. Experiments made occasionally to cross the Spanish breed of cattle with the Durham have not hitherto been successful.

In September last, when the dread of cattle disease called the attention of the Government to the subject, a careful census of the live stock throughout Spain was made, and the following is a comparative return for two periods:

	1858.	1865.
Horses	268,248	672,550
Mules	416,978	1,001,878
Asses	491,690	1,200,814
Cattle	1,880,861	2,904,598
Sheep	13,794,959	22,054,967
Goats	2,783,066	4,429,576
Pigs	1,018,388	4,264,817

There were also, in 1865, 3,104 camels unenumerated. Whether there was more care shown in taking the last census by the Ministry of Finance we know not, but the increase in seven years is very large—equine, bovine, and ovine, not omitting pigs.

The cattle epidemics, which have ranged some time from 1709 till now, have all assumed quite a different character, and the large kinds of these animals in Spain have never been attacked in its present rinderpest form. There is comparatively little beef eaten throughout the country, and more is produced than is consumed. The exportation, especially from the north and Gallicia, is considerable. The Gallician and Asturias cattle find their way to France and to England, but none go thence to Spain. Had but one ox been imported into Spain, and come into contact with the cattle of the country, there can be little doubt the epidemic would have spread; just as happened at Padua, in Italy, in 1711, from a diseased ox, coming from Dalmatia, being introduced into the stalls of Count Borromeo, and others, causing the painful murrain which at that time almost ruined the pastoral wealth of the north of Italy.

THE SUFFOLK AGRICULTURAL ASSOCIATION.

MEETING AT BURY ST. EDMUNDS.

It is to the credit of the Committee of this Society to say that the conduct of the show has materially improved, for the meeting on Friday, July 6, was far away the best-planned of any ever yet held; thus very satisfactorily demonstrating that neither actual experience nor outside suggestion had been thrown away upon the executive. There were, indeed, so many good features developed, so much to see in so many different ways, that, as it strikes us, almost the only mistake was in not extending the exhibition to over two days, instead of bringing the business to a close after only a few hours' opportunity of inspection. As we left the ground a little before three the people were still pouring in, whereas the horses also left their places at three o'clock precisely, and great no doubt as were the attractions of the machinery, the flowers, the poultry, and so forth, the play was still played out to the half-price visitors with the leading character omitted. There is the more reason for prolonging the proceedings, from the stock being all now under cover in capital roomy standings, and so effectively correcting the confusion we had to complain of last year at Ipswich. To be sure, Thursday was a kind of opening day with some steam ploughing to be seen near the town, and a horticultural display in the old Abbey grounds during the afternoon; but the multitudes would not come specially upon such considerations, whereas, we believe, another day for everything would be found to pay famously. So numerically strong at any rate were some of the horse classes, that the judges had not finished their labours until between twelve and one, and the subsequent parade was consequently much curtailed, or, necessarily hurried over, in order to save time when time was so precious. Although there were many very good animals exhibited in the classes the agricultural horses must be considered on the whole as a falling-off compared with many former years; and it is evident that however desirous the residents in West Suffolk may be to have the show held in their capital, they cannot manage to compete successfully with their eastern brethren in the cart-horse department. But four stallions were shown in the first class; and, as events turned out, the owners of three of these must have wished they had been left at home, for, sad to relate, the hitherto victorious Harwich Emperor could not pass the veterinary inspector; neither could May Duke and another horse, whose name we could not learn. This left Mr. Boby's Conqueror master of the field and the winner of the prize. Mr. Rist, we hear, is much dissatisfied, and intends to move for a new trial at Epping, before another veterinary inspector. Mr. Badham entered, but did not send, his three-year-old colt by Royal George, and there being no other entry the three prizes offered lapse to the Society. The two-year-old colts made a good show as they entered the ring, the eight competitors being, however, very soon reduced to four. For a few minutes there appeared to be a doubt on the part of the judges whether Mr. Crisp's Conqueror, by his Conqueror—what a pity it is there should not be a register or stud-book for the Suffolk stallions! or, if the Suffolk men cannot get away from their "Captains," "Britons," "Boxers," and "Conquerors," they should have a distinguishing number, as "Conqueror 1st," "Conqueror 2nd," and so on—the doubt we say as to whether Crisp's Conqueror or Mr. Wilson's colt without a name, was to be the winner. They both had capital action, good colour, the latter the better, and good size; the power of Mr. Crisp's colt, however, gained him the prize, and seldom has it been our lot to see a better animal at the age. His shoulders, girth, and back are something wonderful to look at; but his fore-legs might be better, and we thought his back ribs were a trifle short; though he is nevertheless a very superior animal. Mr. Wilson's colt has beautiful quality, is very active, but his joints and legs are too small for his carcase, and he has not the muscle of the other colt. Mr. Sheppard takes first prize with a very smart yearling entire colt, and Mr. Easterson is second with a thick strong but rather under-sized colt, in a class of only four competitors. The mares with foal at foot were few in number, and although there were one or two Royal Society winners amongst them, the class was not so well represented as we have often seen in bygone years. Sir Edward Kerrison's Lady Jane had no difficulty in shaking off the lot, but she did not look up to the mark; whi Mr. Packard's second prize is a useful mare, but hardly show animal; and Mr. Ward's mare has worn stale, a her loin is very bad. The cart foals were a bad l and Sir Edward has a right to expect a better samp from his mares; for the sire hitherto used is eviden not suited to them. Mr. Freuer's colt foal was select by the judges, but he had a malformed foot, which seal his fate; the prize, therefore, went to Mr. Gates, wh if proud of his foal, must, we think, be ashamed of i dam. Captain Barlow gets a commendation for a n foal by Canterbury Pilgrim, but it was too young, an had suffered too much by its journey to stand a chance o winning. The gast mares formed one of the best classes, Mr. Wolton's wonderful old mare "Moggy" looking a fresh as ever, and winning easily, Mr. Ward's four-yea old being a not unworthy second, with Mr. Freuer's a the Marquis of Bristol's mares each highly commende The Three-year-old fillies, generally a very strong cla were here badly represented; but the two-year-old filli were much better; and Mr. Robert Wrinch's is a ve superior animal; as her size, colour, shoulders, gir and activity show that Raglan, an old favourite of ou has at last got decidedly to be a nonpareil. M Wolton has a good second to her, Mr. Frost and M Wolton receiving commendations. Mr. Cross shows very handsome yearling filly by Harwich Emperor, which Mr. Wolton is again second. Mr. Kersey Coop takes the prize for the best gelding, the Duke of Graft being commended for two very useful horses. Mr. Cris two-year-old colt wins Sir Edward Kerrison's Cup va £20, open to all England, for the best cart stallion whilst Sir Edward wins that given by the town of Bur for the best pair of mares, as well as a similar one, al given by Bury, for the best team of four mares or geldin

If there were not so many of the famous Suffolks sent heretofore, it struck us there were more "nags" than eve the competition in some cases almost overflowing the rin although the quality was not so remarkable. In two three classes, in fact, the prizes were withheld for wa of merit, and not a single commendation was added b the riding-horse judges to the premiums they awarde Speaking by the book, their branch of the business commenced with the thorough-bred stallions for hunting purposes, where Mr. Dobito's Dutchman and Captain Barlow's Ace of Clubs met to fight their battle o'er again, the Dutchman having last year at Ipswich been placed first, when we thus wrote of the decision: "The Dutchman, to whom the judges eventually awarded the first prize, is a sour-headed, coarse-looking, light-middled, rambling-going son of the Flying Dutchman, yet still preferred to the Ace of Clubs, an elegant true-made son of Stockwell, and decidedly one if not the best-looking horse ever shown in this part of the country, and whose good looks would do credit to any show-yard in the kingdom. ...... The judges' decision caused some little astonishment; in fact, people could hardly believe their own eyes when they saw the prize ribbon handed to such a horse as the Dutchman, and we long to see the two before another bench of judges, firmly believing as we do that the prize was given to the worst horse of the three." Elmsdale, the third at Ipswich, was not entered at Bury, where the judges were very unanimous as to the Ace of Clubs being the best of the class, as eventually they placed Mr. Crisp's four-year-old, the Abbot by Corœbus, before the Dutchman; and the young one is full of promise for his purpose as a country stallion, being a good brown in colour, with plenty of substance, great bone, and some style about him. The only other thorough-bred horse entered was Mr. Bonnick's Musketeer, a three-year-old by Voltigeur, another colt not without merit, so that Suffolk is at present pretty well provided in this way. The coaching stallions were not by any means so good a lot, and the best of them, Mr. Cooke's Fireball, with capital action, but bad feet, is as much or more of a trotting horse than a coacher; while the two prize roadster stallions were both of a very superior sample. Captain Barlow's Confidence, the second here, was also second at Islington the other day, where it was the pretty general opinion that he should have been first. And to stand alongside of, he is almost a model of the sort; but he is not so good going—a strong point for a roadster, in which he was beat out of sight by Sir Edward Kerrison's Fireaway, one of the grandest movers ever seen, and a taking horse altogether but for being so light in his middle. There was nothing further against Sir Edward's horse for the All-England Cup but a great roan Norfolk horse, whose coarseness prevented the competition between the two being very close. The hunting mares were a very bad lot, with the exception of Mr. Grout's winner, an apparently well bred, lengthy one, that should pay at the end; but the one coaching mare, "Genuine Yorkshire," was well worthy of the prize awarded. The best hunting foal is a credit to the Ace of Clubs, the best coaching foal to Surplice, and the best roadster foal to Evening Star—all Hasketon horses; but this strong stable was beaten for cob mares by another very clever one from Broome Hall, if more of a smart hack than a cob proper, another fine mover and a deal too fresh on her legs for the rest of the class. Mr. Mumford's weight-carrying three-year-old is a really fine filly by Mentmore, a stallion that people are beginning to abuse rather precipitately, though there was only one to beat here, and the other classes of young things were more unmistakably a failure; in two there being no entries whatever, and in three other divisions the prizes being withheld for want of merit. Amongst the hackneys Sir Edward Kerrison still kept his hand in, taking first and second with two very sweet nags; the chesnut, full of breed and fashion, being as nice a horse to look over as a man need wish to see. He, however, rolls and labours terribly in his trot; whereas the skewbald went as straight, strong, and as merrily as a hack should do, and his action of course placed him. As neither of these were entered for the All-England Cup, Mr. Cooper succeeded in it with a handsome brown mare; Mr. Badham's now well-known grey taking second as a pleasant horse to ride, if nothing so very particular to look at. This open class ran up to a very long entry; but with Sir Edward's two out of it, the amount of merit was nothing extraordinary. The hunters, again, were soon weeded out, and a very nice brown of Mr. Gayford's being disqualified as lame all over, the first prize went easily enough to Mr. Sexton's good weight-carrying chesnut, a horse with a character in the field as well as on the show-ground; the second-best being eventually taken from the same stable. But the bay is only half-a-horse to the other, and just a useful currant-jelly sort of nag, that never seemed to extend himself. "The reserve" of this large class was a leggy chesnut of Mr. Grout's, a deal more fancied by some of the lookers-on than by the judges, and the "wooden-spoon," another chesnut, a sort of half-Suffolk slouching beast, that looked far more like going to plough than going a-hunting. Nevertheless, he went bravely into the All-England Class, of no higher form, where Captain Barlow won the cup with an old-fashioned "hunter" all over; but who took a deal of riding to get him along, and exercised all young Mr. Schrieber's abilities as a show-man; and that is saying something too, for Mr. Schrieber is quite the Mrs. Beverley of these parts, riding one winner for Mr. Sexton, another for the Captain, and being, in fact, in continual request. The competition for this Hunt Cup was all between the son of Weatherbit, and a brown colt of more power and substance, that was ultimately put out of it by the veterinarian. Sir Edward Kerrison's coaching-horse, if but the best of a small class, would have stood as well in better company, while the ponies came out in more force, and furnished two very good classes with plenty of plums to pick out of the pudding. The best, however, in the county class, had not much true pony character, and as he was eventually disqualified as being over the thirteen-two standard, a very pretty brown mare that could walk and trot was let in for first, and a more varmint roan for second. Amongst the unnoticed here was Mr. Ransome's Exmoor Sir Harry, purchased, if we remember aright, at one of Mr. Robert Smith's sales for eighty-odd guineas, though he made no mark at Bury; as against much the same competition Mr. Bramwhite won the All-England Pony Cup with a wonderfully useful maid-of-all-work, putting her head as straight as an arrow and getting over the ground in rare style. Still, she was wanting in some of the fashion of Sir Edward Kerrison's hacks, and the eye, tired with all it was tried on, grew gradually more and more fastidious. But it cannot fall to every man's lot to hold an Ace of Clubs, a Crawl, or a Harlequin.

With the disease of some sort now raging so terribly amongst the sheep in Norfolk, the presence of Mr. Brown's rams was scarcely a welcome sight; but it is only fair to say that without these long-wools the show of sheep would have been very poor, if indeed it can under any circumstances be ranked above mediocrity. Mr. Dobito, as usual, held a lead with the black-faces, and the Marquis of Bristol sent sheep of different descriptions, long and short-wools, that could only have won "under the circumstances;" while Mr. Nunn, one of the judges, said at the dinner: "After the show they had had, the sooner the Downs were down the better, and he hoped the Society would discontinue the class." This is strong language, that will happily not apply to the pigs, of which Mr. Sexton, Mr. Crisp, and Mr. Stearn sent some very capital specimens; Mr. Sexton's blacks being especially good, as his boar and pen of three young sows were never better. In fact, the strength of this section of the show may be estimated from Mr. Stearn never getting nearer than second, so that the happy tidings would not bear wafting to Brandeston, where, as we hear, the Union Jack is hoisted when a sow pigs, and the bells set a ringing when a first prize is awarded!

The show of implements was very large, the entries numbering 660, as compared with 496 in 1865, 400 in 1864, 515 in 1863, 428 in 1862, 392 in 1861, and 198 in 1860. As several of the country shows will not take place this year, by reason of the rinderpest, it may possibly happen that the implement-makers may have entered more eagerly at those meetings which have still been left. On the Thursday preceding the show-day properly so called, there was an exhibition of steam ploughing and cultivating apparatus in a field lent for the purpose by Mr. G. H. Nunn, of Eldo House, near Bury. Mr. E. Greene, M.P. for Bury, exhibited Howard's cultivator worked on the "roundabout" system, and with which he has done some profitable work on his farm, at Westley, near Bury. Mr. Burrell, of the St. Nicholas Works, Thetford, exhibited a locomotive engine, with clip-drum underneath, working a three-share plough of his own manufacture, but on the Fowler principle. Then came the Fowler apparatus properly so called, in which two engines are employed parallel to each other, at opposite ends of a field, drawing alternately a wire-rope between them. The engines are locomotive, and thus the application of horse-power is dispensed with. The objection to this system is the expense attending the two engines; but the apparatus gets much more rapidly to work than any other, and in this regard proved itself clearly superior on Thursday, while it got through a larger amount of work. The apparatus was also more powerful, and adequate for deeper cultivation. As regards other implements, we ought, perhaps, to mention the patent "vowel" washing machines of Messrs. T. Bradford and Co., of London and Manchester; the patent chain corn-drill of Hawes and Spencer, of Tiverton, which supersedes the old cup barrel by a chain, the links of which bear away the seed; the rotary harrow, pulverizer, and twitch extirpator of Holmes and Sons, Norwich; the collection of Messrs. Ransomes and Sims, Ipswich, who are about to open a new warehouse at Bury St. Edmunds, the American and Eureka grist mills of Messrs. Riches and Watts, Norwich; and the excellent collections of Messrs. Tuxford and Sons, Boston; Messrs. Garrett and Sons, Leiston; and Messrs. Woods and Cocksedge. We might go on almost *ad infinitum*, in noticing collections all indicating more or less ability and perseverance, but we can only find space for an enumeration of the remaining exhibitors: E. G. Allen, J. C. Andrews, R. S. Baker, F. Beaumont and Co., J. Beach, T. A. Beary, Bennett and Botwood, E. H. Bentall, R. Boby, T. Bradford and Co., Bridges, C. Burrell, Coleman and Morton, G. Chasvins, A. Dodmand, A. and W. Eddington, Garrod and Gower, T. J. Gostling, Grover and Baker, T. B. Hitchcock, J. Hubbard, E. Humphreys, A. Lyon, C. J. Meadows, R. Meeking, the Mildenhall Engineering and Agricultural Implement Company (Limited), Murton and Turner, Page and Co., Page and Girling, Pickaley, Sims, and Co. (Limited), W. and J. Rands, G. Rands, Richardson and Whetherhogg, Samuelson and Co., T. Smith, J. Smythe and Sons, J. Smyth, W. Swootman, jun., H. J. Taylor, E. R. and F. Turner, Ward and Silver, T. Webb, Webb and Son, Whitmore and Sons, and W. P. Wilkins. The exploits of the traction engines excited much amusement and attention, and the company had often to scamper away to avoid being ridden down by one of these grim giants, which occasionally moved with rapidity over the undulating show ground.

Horticultural and poultry shows were also organized as appendages of the Society's exhibition; and there was some horse-ploughing as well as steam-ploughing. In a champion match a special prize of a silver watch and chain was awarded to George Brunning, of Honington, in the employment of Mr. W. W. Cooper, of Barnham, with one of Ransome's ploughs.

PRIZE LIST.

HORSES FOR AGRICULTURAL PURPOSES.

JUDGES.—N. G. Barthropp, Bury St. Edmunds.
M. Biddell, Playford.
D. Sewell, Beaumont Hall.

Stallions having served not less than 20 mares in the count £10, to C. Boby, Stutton (Conqueror); £6, for breeder first prize animal, to C. Boby; second prize not awarded.

Stallions for agricultural purposes.—Sir E. Kerrison's speci prize, a cup of the value of £20, to T. Crisp, Butley Abb (Conqueror); highly commended, N. W. Bromley, Banse Hall (Prince).

Two-year-old entire cart-colts.—£5, to T. Crisp (Co queror); £4, to W. Wilson, Baylham; £3, to C. Frost, Whe stead.

One-year-old entire cart-colts.—£5, to J. G. Sheppar Campsey Ash (The Colonel); £3, to T. Easterson, Bawdsq

Cart mares with foals.—£6, to Sir E. Kerrison (Lady Jae) £3 to E. Packard, Westerfield (Matchet).

Cart foals.—£5 to J. A. Gates, Sapiston; £8 to Execut of T. Capon, Dennington; commended, Captain J. Bark Hasketon.

Gast mares.—£6 to S. Walton, Newbourn (Moggy); £4 T. Ward, East Mersea; highly commended, the Marquis Bristol (Diamond); A. Freuer, Debenham (Scot); and Sir Kerrison (Depper).

Pairs of Suffolk cart mares.—(Special prize.) Bury S Edmund cup of the value of £10 10s., to Sir E. Kerrison.

Three-year-old cart fillies.—£6, to Sir E. Kerrison (Nancy £4, to G. D. Badham, Bulmer Tye. Commended, T. Kin Preston (Smart).

Two-year-old fillies.—£5, to R. H. Wrinch, Holbrook; to S. Wolton. Highly commended, C. Frost. Commend S. Wolton, jun., Kesgrave.

One-year-old cart fillies.—£4, to T. N. Cross, Holbrook £3, to S. Wolton, jun.

Cart geldings.—£4, to G. R. Cooper, Euston. Commende Duke of Grafton (Jolly and Punch); and H. J. Talbot, Stan ningfield.

Teams of Suffolk cart horses.—(Special prize) Bury S Edmunds cup of the value of £10 10s., to Sir E. C. Kerris

RIDING AND COACHING HORSES.

JUDGES.—H. Corbet, London.
H. D. Dove, Langham Hall.
H. Overman, Wessenham, Norfolk.
Veterinary inspector.—R. Taylor, Colchester.

Thorough-bred stallions for hunting purposes.—£10, Captain Barlow (Ace of Clubs); £5, to T. Crisp (T Abbot).

Stallions for getting hunters.—(Special prize.) Society cup of the value of £20, to Captain Barlow (Ace of Club

Stallions for coaching purposes.—£10, to C. Cooke, Liv mere (Fireball); £5, to T. Harvey, Timworth.

Roadster stallions.—£10, and (special prize) Society's c of the value of £20, to Sir E. Kerrison (Fireaway); £5, Captain Barlow (Confidence).

Hunting mares with foals, £5 to J. Grout, Woodbrid (Alice).

Coaching mares with foals, £5 to T. Easterson (Rainbow)

Cob mares, £4 to Sir E. Kerrison (Favourite).

Hunting foals, £4 to M. Mumford, Creeting.

Coaching foals, £4 to T. Easterton.

Roadster foals, £4 to Captain Barlow.

Three-year-old weight-carrying mares or geldings for hunti purposes, £5 to M. Mumford.

Three-year-old roadster mares or geldings, not awarded.

Two-year-old mares or geldings for hunting purposes, awarded.

Two-year-old mares or geldings for coaching purposes, awarded.

Hackney mares or geldings, £5 to Sir E. Kerrison (Har quin); £3 to Sir E. Kerrison (Crawl).

Riding hackneys, special prize, Bury St. Edmunds cup the value of £10 10s., to R. J. Cooper, Blythburgh Lo (Charming Kate); second cup of the value of £5 5s. to G. Badham (grey hack).

Four-year-old hunters, special prize, Bury St. Edmunds of the value of £20, to Captain Barlow (Will o' the Wisp).

Hunting mares or geldings, £5 to G. Sexton, Thorington Hall (gelding); £3 to G. M. Sexton, Wherstead (gelding).

Coaching Mares or Geldings, £4 to Sir E. Kerrison (b. h. Quartermain).

Ponies, £4 to W. Orbell, Hawstead (Cinderella); £2 to T. King, Preston; special prize, Bury St. Edmund's cup of the value of £6 6s., to J. Branwhite, Long Melford (b. m. Express).

SHEEP.

JUDGES.—H. Lugar, Hengrave.
G. Nunn, Eldo House, Bury St. Edmund's.

Southdown Tups, £6 to Marquis of Bristol.

Shearling Southdown Tups.—Not awarded.

Tups of the Blackfaced or Suffolk breed, £6 to G. Dobito, Kirtling.

Shearling Tups of the Blackfaced or Suffolk breed, £6 to G. Dobito; £3 to G. Dobito.

Long-woolled Tups, £6 to T. Marham; highly commended, T. Brown and G. Sexton.

Shearling long-woolled Tups, £6 to T. Brown; £2 to T. Brown.

Pens of five Southdown shearling Ewes, £6 to C. Boby, Stutton; £2 to C. Boby.

Pens of five shearling Ewes of the Blackfaced or Suffolk breed, £6 to the executors of H. Wilson, Stowlangloft; £2 to W. Harvey, Timworth.

Pens of five shortwoolled shearling Wethers, £3 to Marquis of Bristol.

Pens of long-woolled shearling Wethers.—Not awarded.

Pens of twenty Wether Lambs of any breed, £4 to E. Greene, M.P.; second prize not awarded.

Pens of twenty ewe lambs of any breed.—£4 to G. Gayford, jun., Rymer; second prize not awarded.

Pens of five fat shearling sheep.—Special prize of £4 4s., given by W. T. Simpson, to S. C. Roper, Rougham.

PIGS.

JUDGES.—G. D. Badham, Bulmer Tye.
H. Biddell, Playford.

Boars of the black breed.—£5 to G. M. Sexton; £3 to S. G. Stearn, Brandeston; commended, T. Crisp.

Boars of the white breed.—£5 to G. M. Sexton; £3 to G. M. Sexton; commended, G. M. Sexton and T. Crisp.

Sows and pigs of the black breed.—£4 to T. Crisp; £3 to S. G. Stearn.

Sows and pigs of the white breed.—£4 to J. Sawyer, Tunstall; £3 to S. G. Stearn.

Breeding sows of the black breed.—£3 to G. M. Sexton; £2 to T. Crisp.

Breeding sows of the white breed.—£3 to G. M. Sexton; £2 to S. G. Stearn.

Young sows of the black breed.—£3 to G. M. Sexton; commended, S. G. Stearn.

Young sows of the white breed.—£3 to G. M. Sexton.

CHEESE.

JUDGE.—G. Oliver, Bury St. Edmunds.

Suffolk cheese.—£3 to T. Sawyer, Thwaite.

THE DINNER.

The dinner took place in the Corn Exchange, but from some cause or other was very thinly attended. Six or seven long tables had been ranged across the hall, and were covered with substantial cold comestibles; but not more than three of these tables were fully occupied, and two were quite empty. The toast list was of inordinate length; and to make matters worse, some extra toasts were allowed to be interpolated by the chairman, the Marquis of Bristol, who occupied the post of honour in the absence of the president of the Society, Sir E. C. Kerrison, M.P. Sir Edward was on the show-ground, but his health not being yet fully re-established he abstained from the excitement and fatigue of a public dinner. Although the company was then thin, and thinned still further as the evening advanced, some of the speeches were of more than customary agricultural interest. Major Parker occupied the vice-chair, and the company embraced Lord Augustus Hervey, M.P., the Ven. Archdeacon Lord Arthur Hervey, Mr. R. J. H. Harvey, M.P., Mr. M'Lagan, M.P. (Scotland), Mr. J. A. Hardcastle, M.P., Mr. E. Greene, M.P., Mr. C. S. Read, M.P., and Mr. de Grice, the Mayor of Bury St. Edmunds.

After the usual string of loyal and complimentary toasts, Lord A. HERVEY, M.P., and Major PARKER, M.P., replied to the sentiment of "The County Members." Lord Augustus said the measures adopted by Parliament with regard to the cattle-plague had, by the blessing of Providence, nearly extirpated the disease. He wished he could congratulate the meeting upon the total disappearance of the plague, but he believed that in a very few weeks there would be a clean bill of health. Another campaign had also been commenced against the malt tax (laughter and cheers), but that he would leave to the future (laughter). With regard to the reform question the noble lord expressed a hope that whenever the matter was settled, the interests of the land would not be neglected.

The CHAIRMAN, in giving the "Mayor of Bury," observed that although the cattle plague had been greatly lessened, no relaxation of the rules enforced could take place for some time. In many counties there was a tradition still extant with regard to the plague that visited the country now nearly 100 years since, viz., that it gave way to treatment in the summer, but returned again in the winter. This was a point which must not be lost sight of; and if the Privy Council should think it right to continue the measures at present adopted, he hoped the farmers would generally agree to place no obstacles in the way (Hear, hear).

The MAYOR of BURY replied, and gave "The Borough Members."

Mr. HARDCASTLE, M.P., and Mr. GREENE, M.P., responded. The latter hon. gentleman said he had never seen a better show of horses than he had witnessed that day; the President especially sent a class of horses which the meeting would do well to copy. Although some admirable specimens had been on view, he feared, that the breeding of horses was coming down. If he might make a suggestion to his agricultural friends, he would remark that as they must keep a horse with which to drive to market and to ride round their farms, they might just as well keep an animal with some quality about it, which when not fit for riding would throw out a foal worth having. They might as well do this as keep an animal which would eat just as much corn, and yet be worth nothing to breed from. He hoped next year, when "The Royal" came to Bury, there would be as successful a meeting as had now taken place. He would also impress upon the executive of the Suffolk Society the desirability of extending the meeting one or two days.

Mr. HARDCASTLE, M.P., proposed "Success to Agriculture," and expressed his regret that Mr. Read, the member for Norfolk, had been obliged to leave, as otherwise his name would have been coupled with the toast, and he would, doubtless, have contributed some of that good practical sense for which he was so well known. The tenant farmers, in electing Mr. Read, had shown their power, and they had also shown that they could trust one of their own body to represent their interests. Although Mr. Read had left, there was a gentleman present whose name was very well known—Mr. Overman; and although he (Mr. Hardcastle) had been obliged to find a fresh fox, he had, perhaps, found as good a one as the one which had left (laughter).

Mr. OVERMAN, after remarking that Mr. Read had had of late more experience in "speechifying" than he had enjoyed, said there was much significance in the word "success." He was sure that the farmers wanted it, for what with the bad crop of 1865 and the cattle plague, they were almost come to a stop. But they must not look back; they must look forward, and he was happy to say that their growing crops were looking as well as they could wish. They must earnestly hope that no hailstorms nor anything might blight them, for they wanted all they could get. Some landlords had been taking down hedge-row timbers, and some had been killing rabbits. These were very great helps, for by large hedge-row timbers' the farmers lost many acres, and by rabbits God only knew what they lost (laughter). He was sure that when landlords found that their tenants were in difficulties, they would be ready to give them a little credit. This was very essential; in fact, it would be more useful to them than the repeal of the malt tax (laughter and cheers).

Lord A. HERVEY, M.P., gave "The Successful Exhibitors," on whose behalf Mr. T. CRISP responded.

The CHAIRMAN gave "The Strangers," associating with the toast Mr. M'Lagan, M.P.

Mr. M'LAGAN, M.P., in acknowledging the compliment, said, connected as he was with agriculture in the Lothians of

Scotland, and fond of agricultural pursuits generally, he was not loath to accept the invitation of his friend Mr. Green to visit Suffolk, to inspect its farming, and to be present at the show that day. His expectations were certainly highly raised, as he had read much of Suffolk, and he was glad to say that those expectations had not been disappointed. He had not been disappointed in the beauty of the town of Bury St. Edmunds, rich as it was in historical associations, and famous for one portion of England's history which had contributed so much to England's prosperity, England's liberty, and England's glory. He had not been disappointed with the careful cultivation which he had seen in short drives in the county, and in the magnificent crops of barley which were the results of that careful cultivation. He had not been disappointed in the excellence of the show and the quality of the stock exhibited; where all was so excellent it would be invidious for him to name any particular stock. He must express his admiration, however, of the enthusiasm and spirit with which the show had been conducted, not merely by the agriculturists, but by the town's-people. He thought it was wise to combine horticulture with agriculture; for there was nothing which more tended to elevate the taste of the working classes than to present them with something beautiful, such as flowers; and to add a horticultural exhibition to the show indicated that its object was not merely the improvement of stock, but the improvement also of the labouring classes. The exhibition of steam cultivators which he had witnessed on the preceding day also said much for the enterprise of the Suffolk farmers, because he believed that some of that apparatus belonged to gentlemen practically engaged in agriculture in Suffolk. An old Roman author, when asked what he considered the best science for farming, said, "Cultivation, cultivation, cultivation;" or to put it in other words, in a motto which he saw inscribed on one of the triumphal arches,

"As ye your lands do till,
So ye your barns do fill"

(cheers). We might manure our lands well, but we could not really get the benefit of that manure unless we cultivated our lands well, and there was no better way of doing this than the adoption of steam cultivation. Many of those who had just commenced steam cultivating never thought of returning to the old system. Thus far he had given nothing but praise, and it might be thought that he dealt in nothing but butter, but he would just say a few words to show that he had also a little pepper and salt. He thought the ploughing of Suffolk was somewhat behind that of Scotland. The fault he found with the ploughing which took place on the preceding day was that the furrows were laid too much on their backs. On the clay soils of Scotland, the farmer would not think of keeping a man who ploughed in that way, although perhaps on the light lands of Suffolk the point was not so essential. This was a mere minor point, and he must, as a stranger, express the great gratification he had felt in attending the meeting; so great was the hospitality and kindness which he had received that he hoped that this would not be the last visit he should make to Suffolk (cheers).

The toast of "Mr. Ord and fox-hunting" having been very enthusiastically received,

Mr. HARVEY, M.P., gave "The Judges."

Mr. BARTHROPP replied, and adverting to the first-class of stallions, said the award made might perhaps have excited some surprise, but the matter did not rest entirely with the judges: it was taken out of their hands, and for further information on that point they must refer the meeting to the veterinary surgeon. In the prize for three-year-olds there were no competitors. The two-year-old entire colts were very good ones: there were two particularly good horses in that class. The mares showed a great falling off from what he had seen at former meetings of the Society. He remembered the time when the entries comprised ten or a dozen brood mares with foals at foot, and very much better than had been seen that day. The two-year-old fillies were very good indeed, and the yearling filly was also a very nice one. The prizes so liberally offered by the town of Bury St. Edmund's for pairs of mares and teams of cart-horses were very often very difficult prizes to award. A man might have one or two very good animals, but it was difficult to get four to enter, and therefore he felt it was rather a mistake to offer prizes for a team; it would be better to give prizes for two instead of four.

Mr. OVERMAN also responded, and said he regretted that hi colleagues had bolted, as otherwise the meeting would hav had an able speech from his friend Mr. Corbet, who had bee associated with him as one of the judges of riding-horses. H must congratulate the meeting upon the magnificent animal shown that day: there had been a great improvement in thei action. The animal which struck the judges more particul was the roadster stallion of Sir Edward Kerrison. He (M Overman) wished this horse was his own; if he were, he woul call him "England's Gem," for he much questioned whethe there was another such animal in England.

Mr. NUNN acknowledged the toast on the part of th judges of sheep. Referring to Down sheep, Mr. Nunn sai no one liked Down mutton better than he did, but Dow sheep did not produce enough of it. He hoped, indeed, tha the society would discontinue prizes for Downs, unless the got a better show. His colleague, Mr. Lugar, who used to b a Down man, had given up Downs altogether; and he (Mr Nunn) could assure the meeting that the Downs entered we certainly not worth the prizes. There was no better mea produced than Down mutton, but it was too long in coming into the butcher's shop. The other classes were also badl represented: in fact, he never saw worse sheep shown in hi life (laughter). As regards the horses, he happened to b last year, at the Plymouth meeting of the Royal; and h could assure the meeting that the horse show at Bury tha day very much surpassed that of the Royal last year. H hoped that in the coming year the county would strain ever nerve to show that, in the matter of horses, Suffolk could bea the world.

Mr. GLEED responded for "The Stewards."

Mr. KERSEY COOPER proposed "The Implement Ex hibitors," who, he remarked, had contributed very much t the success and interest of the meeting that day (cheers) He would associate with the toast the name of Mr. Greig, th representative of Messrs. Fowler and Co., of Leeds.

Mr. GREIG replied, and said he regretted that it ha fallen to his lot to respond to the toast; as the per son who had contributed more than any other man to the success of steam-ploughing had gone at the seaso when he would have seen the fruits of his labours. Steam-ploughing was one of the most difficult engineering problem of the day. Some of the best talent in England had been employed upon it, but nothing but the dogged perseverance of the man who was gone had brought the matter to a successful issue. He was often asked why steam cultivation was so slow in its progress? Mr. Overman had made an allusion to rabbits and hedge-row timber. Rabbits offered no great impediment to steam cultivation, but hedge-rows did. If these obstruction were removed, the system of steam cultivation now introduce would pay 20 per cent. or 50 per cent. to the farmer; bu where there were small fields and no roads, the matter wa attended with great difficulty. Another difficulty was th education of the labourer. The farmers were not able to in struct their labourers; and if engineers were not able to teac their men to go and do such and such a thing, their machin would fail. The advantages of steam cultivation were, how ever, very great. For instance, if a farmer could have hi fields ploughed in a certain time, farming would be much mo remunerative than it was at present. It was objected th steam cultivation was impossible, on account of the expensi ness of the machinery; but he was prepared to refer to th accounts of persons who had been using steam ploughs fo some years, and who, after paying for breakages, &c., had made a larger profit than they ever did before. Persons wi small holdings ought to combine for the purchase of a stea plough. The state of the labour-market rendered it importa that farmers should consider how they could do their work at least expense and with the fewest number of men; for if lab rose in price, as it was likely to do, farming would become l remunerative instead of more profitable. It was agreed th the feeding of stock was more profitable than the production cereals, and would it not be better for the farmer to have fe horses at work, and to use coal instead of the produce wh such stock consumed? Another point which called for c sideration in connection with most systems of steam-plough was the impediment occasioned by the continued treadin the horses employed, which led to the consumption of a g amount of coal.

Mr. GREENE, M.P., said he had given steam-cultivatio trial, and he found that it had marvellously improved the men whom he had set to work with it: in fact, he had cultivated without any difficulty whatever. If you made it worth a man's while to do a thing, he very soon found out the best way of doing it. For a farmer to be able to cultivate his land at a particular season of the year might be worth three times as much as it was at another season. Steam-cultivation could, however, be only tried on fields of sufficient size to admit of the outlay of capital. A farmer of enterprize would, however, probably have a steam-engine to do his thrashing; and as it could also do his ploughing, it would not be right to charge more than half the outlay to the ploughing. He had come to the conclusion that steam-cultivation was deserving the serious attention of every occupier of the soil who intended to compete with the foreigner; for he might mention that from the enormous amount of land which steam was bringing into cultivation abroad, the late Mr. R. Garrett had recently expressed to him an opinion, that before three or four years had elapsed, wheat would be down to 28s. per qr.

Mr. **Nunn** said he thought his forty-acre field ought to be cultivated by steam in one day. Then he should think something of it.

Mr. W. **Biddell**, in proposing "The Town and Trade of Bury," argued briefly in favour of the repeal of the malt-tax.

Mr. R. **Boby** responded; and after a few other toasts the company separated.

ITALIAN RAY-GRASS.

The separate cultivation of ray-grass has been in use as a foddering plant in England for upwards of two centuries, as it appears from "Woldridge's Husbandry," first edition, to have been cultivated prior to 1677; besides which, red clover, spurry (Spergula arvensis), trefoil, and nonsuch were the only plants then cultivated as *artificial grasses*.

Ireland was never backward in adopting improved husbandry, which generally may be attributed to the return of gentlemen of rank from service in the army abroad, who brought home such information, from time to time, as to the farming practices in the Netherlands, Germany, and other countries, whence the introduction of turnips, transplanting rape in the autumn, lucerne, &c., all of which are to be found in the early proceedings of the Dublin Society. Common rye-grass (Lolium perenne) is a native plant, and found more or less in all natural pastures or meadows; but the first account we have of its being cultivated as a separate crop in Ireland is to be found in a paper read before the Dublin Society on the 25th of November, 1731, soon after its formation, by Captain Stothard, as practised by him at Maherlin, in the county Down, with a computation of the profits of an acre for five years successively, and ordered to be registered.

In this paper Captain Stothard says that "he has had particular advantages from the use of ray-grass, which is this: "That whereas before he came into the use of it he lost every year some sheep by the rot and other distempers, and such sheep as did not die of the rot and were in good order yet had their livers tainted; but since the time he had fed his sheep with the ray-grass, which was the last five years, though the ray-grass was but the least part of their feeding, yet it has this effect, that he hath not lost one sheep these five years past by the rot, or any other distemper, nor have their livers been the least tainted, but all proved very sound; and he finds upon inquiry, that sheep are nowhere, that he could hear of, subject to the rot where they have ray-grass for part of their food." We have given the above extract from the manuscript copy of Captain Stothard's excellent paper, to show that the beginnings of the Royal Dublin Society all tended to the advancement of agriculture, several members contributing excellent papers the first year of its existence, amongst which we find another from the same gentleman on the cultivation of clover.

Since those times several improved varieties of ray-grass have been introduced, such as Pacey's, Russel's, Whitworth's, Stickney's, &c.; but of late years the Italian ray-grass has been introduced, which in a great measure supersedes all the others in its use of alternate husbandry, yielding the quickest and heaviest crops when properly treated, both as a soiling and hay crop.

The Italian ray-grass is by some botanists regarded as a distinct species, and by others as a marked variety of the common perennial ray-grass, and is itself divided into two varieties—one more upright than the other, and of a paler colour, the paleæ of the plants having a long awn which distinguishes the Italian from all other ray-grasses; the other kind has a more fibrous root, the colour darker, a spreading stem, and with awns comparatively shorter. This latter variety is regarded as the true sort by the most intelligent cultivators, as it produces the most luxuriant and heaviest crops. This question is pretty well set at rest by the following report of Mr. Rodwell, of Alderton Park:—

"Having observed, in the growth of my crop reported on in the Royal Agricultural Society's *Journal* in the year 1841, some plants that were, as I supposed, not genuine, that is, not of the pale colour, nor producing with long awns, I determined upon a fresh importation of seed direct from Italy, from which I have since tested the properties of the two varieties, both of which I have since cultivated with great care and attention; and I am now fully convinced, from every comparison I have made, not only of the different kinds of plants in different fields, but of both kinds in the same fields, and in every case have satisfactory proof that the best grass—namely, that which is the most productive and the most nutritive for all cattle—is the plant which spreads upon the ground, is dark-coloured, and being the produce of seed with short awn; and my conclusion has been more fully confirmed during the past week by testing the varieties, both in weight and bulk, finding that the dark-coloured plants from the seed of the short-awned grass exceed both in weight and bulk the pale-coloured plants by more than 30 per cent. It will be also worthy the observation of those who intend to cultivate this grass that if intended as a biennial or a perennial grass, in that case the dark-coloured is much preferable to the pale-coloured grass, the former branching and becoming thicker, and the latter spindling up, and thus becoming thinner in plant every succeeding year."

Either sort has a stronger braird, broader and more abundant foliage, and longer spikes than any of the other sorts of ray-grass, and are preferred by cattle, either as soil or hay, and to the farmer is more valuable for one year's grass than any other sort, in its early maturity and bulk of produce.

But from the rapidity of its growth, it is not so well suited for mixture with any other sorts, except that in small quantity it may be sown in permanent pastures, to give shelter to the more tardy and more permanent grasses, and give an early bite to the ewes in spring, for which it is admirably adapted; but this very rapidity of growth renders it unsuitable to sow as a soiling crop with corn in the spring, for it grows so strong that it injures the corn crop, though it improves the straw as fodder; besides, it exhausts itself the season it is sown, and does not produce so early or so well the following one. On this account it should not be sown as a soiling crop till the autumn, when the corn crop is removed; but the better practice, when designed for an early soiling crop, and to cut repeatedly, is to sow it immediately after the removal of early potatoes; the land is then in the highest state of cultivation to receive the seed, being rich and thoroughly pulverised; the seed brairds freely, becomes strong and luxuriant, and so well established in the ground that no amount of frost can throw it out.

Managed in this way, it produces, in some seasons, an 18 or 20 inch cutting so early as the middle of March; in others, such as the present, it may not come in for another month, and with a top-dressing of a little rich compost, or liquid manure, after each cutting, three, and sometimes four and even five, cuttings may be obtained during the season.

"STUNTING CATTLE."

Much is said about the improvement of breed, but comparatively nothing about stunting cattle, although the latter is and always has been the more common practice. In point of fact, the latter must of necessity precede the former, which is merely a restorative work, otherwise improvement would be impracticable, for cattle were originally created perfect in the most comprehensive sense of the word, in the sunny realms of Paradise, so that they were then incapable of improvement. It soon became otherwise when they were turned outside, adrift into the world, the domestic companions of our fallen race; for with the sad change a thousand misfortunes befel them.

History, sacred and profane, is entirely silent as to the Paradisian breeds of cattle, and also as to the effect produced upon races during the period of the antediluvian world; but it may be safely concluded that they lost much of their original excellence, because the "curse" fell upon cattle as upon all other products of the soil. Again, it is natural to suppose that Noah, who was by profession a husbandman, would make the best selection in his power at the Flood, with which to stock the plains of Shinar. Indeed, some suppose the selection was made by the infallible hand of Providence, so that there could be no mistake about the matter. It may be farther assumed, that so long as the human family remained together a much greater degree of uniformity of breed than at the present day prevailed; but subsequent to the confusion of tongues at the Tower of Babel, and the splitting up of the human race into tribes according to their respective languages, and their dispersion over the whole of Asia, Africa, and Europe, the physical changes thus experienced by cattle from a diversity of food, climate, and management would less or more interfere with their natural growth, the result being all that interesting diversity so prominently exhibited in the different native breeds throughout most of the habitable globe.

In the outset there would be three causes at work in effecting the stunting process, viz., food, climate, and management; but after a while, or after a diversity of breeds had been produced, the crossing of those breeds would also produce a certain effect on physiological development, and may therefore be taken as a fourth cause.

Were it possible to trace any of our native breeds, such as the Devon or Shetland ox and sheep, to their original parentage either in Paradise or in Noah's ark, the narrative would form an interesting chapter of events in stock management, lying, as it were, between two extremes doubtless wide asunder. The former extreme, say the Shetland ox of the present day, one of the most stunted breeds of the bovine race, is subject to observation; but the latter, the Paradisian or Noahitic extreme from which he is descended, is a question of hypothesis far beyond the reach of a practical or satisfactory solution. Some superficial writers have supposed this, and the next breed somewhere in Europe or Asia, the parent stock from which the Shetland ox sprang; but the hypothesis is almost too absurd to merit a hearing, much less a formal refutation; for the parent stock according to this hypothesis is itself a stunted extreme, which has perhaps undergone more changes since its ancestor left Noah's ark than has the Shetland ox itself. In Paradise the two breeds in question may be said to have had a common parentage, but whether the Shetland ox or his assumed ancestral prototype is the nearest in likeness to this common parentage; is a question which cannot now be satisfactorily solved. People are naturally disposed to give a greater prominence to their own native breed of cattle in questions of this kind than they deserve, and accordingly we have heard it argued that our Highland breeds of cattle stand nearer the symmetry of their Paradisian primogenitor than our lowland breeds. But opinionative arguments of this kind go for nothing in the solution of the question at issne. Were it a proposition only involving size, the Shetland ox under such an hypothesis would doubtless be farther from the original than some of our larger breeds, as the Hereford ox; but size has less to do in the matter than form, organization, and vitality; and therefore, however conspicuous and imposingly attractive it may be, it ought not to be allowed to lead argument astray in the investigation of the subject.

How far our native breeds have departed by stunting from the original? and What progress has been made toward that original in the improvement, or rather restoration of our native breeds? are perhaps the best forms of putting the two questions, as they more immediately come home to every stock owner for solution. But although both are practical questions and easily put in a variety of forms, it is next to impossible to give either a practical solution; for the only practical solution that can be given amounts to nothing more than an experimental inquiry, with a view to discover the original in each case, or rather to discover the best quality of ox or sheep for any peculiar climate, dietary, and system of management, and how near that quality approaches the original.

In the former of these questions, the stunting or deteriorating process is doubtless in practice one of downs and ups and ups and downs. The ox, for example, loses at one time and gains at another, but at the close of life the losses are in excess of the gains: hence a certain degree of deterioration takes place. Such were the facts of the case experienced by the ox, first, when he left the garden of Eden, and second when he left the plains of Shinar with our ancestors for Western Europe. The experience of the present day is somewhat different in detail, owing to the stunting process having attained to its opposite extreme or minimum limit. Formerly for example, the practice was downs and ups—now it is ups and downs. Originally, the ox had to lose physiological ground before he could gain anything: in other words, he originally stood on the top of the hill. Now he stands at the bottom of the hill, below which level he cannot descend further under the existing circumstances of his peculiar case as to climate, food, and management; consequently, he must ascend the hill so far, before he can descend again to the same level; so that the "ups" may be said to be equal to the "downs" in magnitude. Originally, the reverse was the rule of measurement, the descent from the top of the hill being greater than the ascent. Naturally, it may be said, the ox was unwilling to leave the top of the hill: hence the earnest endeavours of Nature to rise up again, the first opportunity that presented itself. But climate, food, and management were against Nature; and so the poor ox eventually found himself at the bottom of the hill, the domestic companion of our fallen race! How far he has fallen, or the distance between the top and bottom of the hill, is not subject to measurement by any rule yet discovered; consequently the solution of this problem must be left in abeyance for the present. But however much this is to be regretted, it is in some measure compensated by the earnest and exemplary endeavonrs of the poor ox himself to regain his former position by ascending the hill as fast as climate, food, and the doings of his owners will permit; for to remain at the bottom of the hill is contrary to his natural aspirations. But being virtually the domestic slave of man, he has no alternative but to fight the battle of fate with unflinching prowess, as he has hitherto done, until the fiat of wiser times than the present loosen his stunting shackles, and thus allow him fair-play and freedom of action to re-measure his steps up-hill in accordance with the laws of Nature implanted in him.

There was thus at the beginning a natural law in operation upholding the beauty and perfection of the organic structure of the ox, against the united efforts of bad weather, an improper dietary, and the misdoings of the farmer to pull it down to a lower standard level; and the same natural law is now in active operation to regain what has thus been lost, as far as climate, food, and the professional doings of the farmer will permit. Our native breeds obviously present different levels to which the stunting processes at work have lowered the natural standard, although it is difficult to say which is the lower level, in many instances, as compared with the original, more especially as regards the normal perfection of internal organization and vitality. In common conversation, these different levels are said to be "natural to the district." Thus the Shetland ox is natural to Shetland, the Devon ox to Devonshire, and, in short, each of our native breeds to its own peculiar locality; but in this technical designation there is much latitude used in the mode of expression, and still more in the meaning of terms; for in every locality certain soils are said to produce finer cattle than others, the breed in both cases being the same. Again, remove, say a Hereford ox to Shetland, and a Shetland ox to Herefordshire, and the former would be stunted to the Shetland level, while the latter would rise to the Hereford level in course of time, although the Shetland-Hereford and the Hereford-Shetland might remain very different in many respects from the native breeds, the animals in both cases being left entirely to the natural food and treatment of the two districts in question.

There is thus manifestly involved an equilibrium of antagonistic forces, so to speak, not very easily expressed in scientific phraseology, relative to the natural levels occupied by our native breeds of cattle in reference to the stunting process *versus* the laws of nature, but which will readily be understood by substituting the bottom of the hill as applied to any individual breed, for its lowest level, and the top of that hill for its original position. The sentence, "Cursed is the ground for man's sake," so interfered with climate, produce, and the heart of man as to drive the ox from the top to the bottom of the hill in a warfare which we shall not attempt to describe; but the sentence being for man's sake, it was suspended as it were at the bottom of the hill, nature there not only being supplied with recruited energies to resist further descent, but to cooperate with the farmer, who, by the same infallible Judge, was commanded to wheel about his ox, and fight his way back to the top of the hill, which brings us to the second part of our subject, the improvement of breed, and how far that improvement harmonizes with the original beauty and perfection of the ox.

Generally speaking, although it may be impossible to make any satisfactory comparisons with the original, yet it is nevertheless manifest that most of the breeds of cattle in this country have been greatly improved. But while this may be granted, it must also be conceded that when the details of the work of improvement are entered upon, they will not bear a close examination. In other words, while we have been growing extra quantities of fat, we have been retarding the natural development of other parts, upon which health and vitality more immediately depend. The progress made, therefore, towards the top of the hill is very questionable; for, to go back and bring up the parts that have thus been allowed to fall behind may cost more time and money than to start *de novo* from the bottom of the hill with one of our native breeds, improving all the parts of the body alike, or rather in accordance with the natural demands of the original. It is seldom that the stunting process is uniform in its action upon the different organs of the system; consequently, if certain organs have been deteriorated in a greater degree than others—a result which is very prominent in all our native breeds—the natural demands of the original require that those organs receive greater amelioration, so as to bring them alongside the others, as it were, in the march of improvement. In point of fact, there are numerous ways of improvement in operation, and these, for the sake of discussion, may be reduced to three methods, viz.: *first*, the improvement of our native breeds by adapting climate, food, and management artificially in accordance with the natural requirements of cattle; *second*, the early maturity forcing system; and *third*, the crossing of our native breeds with the latter. Of these three plans the first is the only one whose details will bear a practical and scientific investigation.

As a general rule, it may be said that if the stunting causes are removed, Nature will cure herself, or put herself to rights. In other words, if the owner of the ox will only protect him from the extremes of heat and cold and other objectionable climatic influences, supply him with proper food, and otherwise attend to his natural wants, he will slowly climb the hill to his original position, or to one equally favourable, both in a physiological and money-making sense—comparatively speaking. In the medical world there is a familiar old saying to the same effect in the case of most diseases; for all that the medical man can do is to clear the way as much as possible of rubbish, and leave the rest to the *vis medicatrix naturæ*. And just so is it with the farmer in the cure of certain deformities, external and internal, of his ox or sheep; for all that he can do is to remove as much as possible the stunting causes, and leave the work of reformation to the *vis medicatrix naturæ*. Thus, if a cow drops and suckles her calf, it will thrive and move up-hill, so far, provided its dam has plenty of rich grass, and yields an abundance of nourishing milk. But it was never intended by Nature that cows should suckle their calves during the whole of their lives, and this is a fact that more than the half of the breeders of stock overlook, or, at least, the practical data which it involves; for calves require to be weaned naturally as it were, by entering gradually upon a nourishing diet some time before they are ruthlessly taken by rough hands from their mother's milk. At this period (weaning time), upwards of ninety per cent. of calves and lambs are stunted in their growth by improper food and treatment. They have got so far up-hill, and manifest no little noisy anxiety to go further without restraint and loss of time; but their owner, deaf to the clamorous wants of his calves, and blind to his own best interest, says "No; the old routine rule must be observed, which was to go down the hill to the bottom, and begin again with the next year's grass and ascend;" and to this day this old stunting routine rule is closely followed by thousands, who dare not be told that turning their young cattle down-hill is, to speak of its demerits in the mildest terms possible, reversing the natural and providential order of things. That mankind are prone to do what they ought not to do, and to leave undone what they ought to do, is doubtless a sad misfortune, but it is no less true on that account; and the general doctrine which it teaches is applicable to the conduct of farmers in stunting their young cattle. It is no doubt in keeping with the vanity and pride of the human heart for man to talk loftily of improving the breed; but the expression is not only fallacious, but a very improper one in other respects, being much calculated to lead superficial observers astray as to their own doings and duties in the management of their cattle. The farmer may do much to supply the demands of Nature when these are beyond her reach—as they almost invariably are in the growth of cattle—if he would only make himself thoroughly acquainted with her various requirements in this respect—requirements far more comprehensive and minute in detail than generally imagined.

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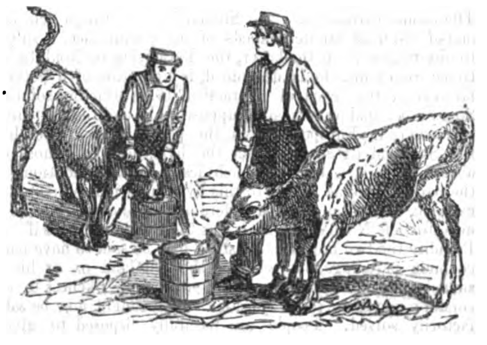
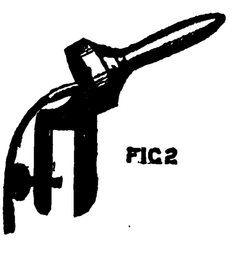


FIG. 2.

Fig. 2 shows the rubber "teat" detached from the pail or vessel containing the milk.



ULSTER TENANT-RIGHT.

Just now, when the relation of landlord and tenant in Ireland is a Parliamentary question, the economy of the Ulster system of tenant-right, and the security which it affords to landowners and tenants for their respective capitals invested in Irish agriculture, is a legitimate subject for discussion. When residing in that province, we found it a generally expressed opinion by those landowners and tenants with whom we conversed, that the Ulster tenant-right was an economical system, and a good security for rent, and also for tenants' capital, skill, and labour; but, after a residence of nearly three years, and the examination of several estates and farms in the counties of Armagh, Tyrone, Antrim, Down, Meath, and Cavan, we were unable to discover facts to justify either conclusion, much less the economy of capital thus invested. On the contrary, the facts of the case invariably proved that the investment was injudicious; that it afforded no satisfactory security for the regular payment of rent; and that it was still less to be relied upon by tenants either for a continuation of tenancy, or for the realization of their capitals with fair interest. Such being the professional conclusions at which we arrived, in valuing farms and estates for the investment of both capitals by persons belonging to the United Kingdom—conclusions totally different from the common credence continually preached in our ears—we shall endeavour very briefly to give the practical data or premises from which they were deduced.

As to economy of capital: Upon a large estate, with a rental of about £14,000 a year, where we were chiefly employed, tenant-right was valued at £10 per acre to the landlord, and this is a very common landlord valuation throughout the whole province of Ulster. Indeed, with few exceptions tenant-right is valued at a fixed sum of money to the landlord when he removes a tenant. And, strange as it may appear to the ear of the English and Scotch farmer, this is true whether the tenant has actually any capital invested in his farm or not? In the vast majority of landlord-cases that came under our notice £10 was the value of the tenant-right. But upon two small estates it was from £8 to £12, the latter being the maximum and the former the minimum value.

In some cases, where the tenant has his farm in high order by means of a large investment, and wishes to dispose of his tenant-right, he may obtain more money than the fixed valuation to the landlord, the approval of the latter to the incoming tenant or purchaser being necessary. But this rule applies in England, and therefore it is not, properly speaking, Ulster tenant-right. If, for example, the incoming tenant gives £15 per acre to the outgoing tenant, and that the landowner of the estate has it in his power to take the land into his possession at the expiry of a certain term at £10, then the £5 odds are truly tenant's capital that can be taken out of the land by cropping during the currency of the lease, and in Scotland and England this investment of tenant's capital will find two purchasers to one as compared with the Province of Ulster, so that in this case the balance is against the Ulster system; and the reason is a tangible one, for in the United Kingdom the incoming tenant has not to pay £10 for an Irish land speculation, *i. e.*, the investment of £10 per acre in farming without interest, as the facts of the case prove, for when the £5 are taken out of the land or any extra tenant's capital invested, it is then seldom more than in a fair profitable crop-bearing state, so far as our experience in the above counties extends. In other words, the extra money per acre is a worse investment than in England, while for the £10 we did not find amongst the farms to let, which we examined in 1843, 1844, and 1845, one where we could promise to our employers a fair interest for their capital thus invested. On the contrary, a large sum was necessary to put the lands in a fair crop-bearing state; and this was applicable, at the time, to more than half the area of land in cultivation upon the estates which we examined in the above six counties of Ulster. In many cases the land was even in a worse state, for the profitable investment of tenants' capital under a thirty-years' lease, than if it had been lying in its original state; and yet such farms could have been readily let, the incoming tenant paying to the outgoing tenant £10 per acre for his tenant-right, and for no other practical reason than the Ulster guarantee that the landlord, after having approved of his being incoming tenant, could not turn him out without refunding his capital thus invested. In a professional or practically-business light, the whole affair of letting and sub-letting land, in the North of Ireland, is so incredible that our employers could not understand it. In plain Irish, it is beyond the province of ink and paper to make it intelligible; for the thing must be seen as big as life to comprehend its real meaning; and even then a residence of some time is absolutely necessary, to see its different phases of working in its wheel-within-a-wheel movements, such as the agrarian authority of "Tommy Downshire and Brothers," before a pounds-shillings-and-pence estimate can be formed of it, so as to tally with the purse-strings of an independent English agriculturist in search of a profitable investment for his capital as an Irish tenant, with a peaceful home, and the other et-ceteras of social life to which he has been accustomed.

Originally, the Ulster tenant-right may have covered the tenant's capital invested in the improvement of his farm or in the "fining down of his rent" during the current period of his lease; but as all improvements soon wear out, and as fines are for the most part terminable, landlord's working capital or tenant's working capital profitably in land is no longer represented by Ulster tenant-right. Some say it originated in the manufacture of the flax grown upon the farm into linen. In every farm-house or shop adjoining there were one or more spinning-wheels, reels, and looms at work. When the North of Ireland was planted with English and Scotch settlers, they agreed to introduce the linen trade; consequently, they became entitled to payment for that trade, if removed by landlords, according to the custom of the United Kingdom. How much truth there is in this conclusion, we were never able satisfactorily to determine, as the hand spinning-wheel and loom were superseded by power spinning and weaving machines long before we knew Ulster by residence, while "hearsay" and history were greatly divided on the question. Some, for example, based their claims on the plea that they or their ancestors had "fined down their rents;" others pointed to the improvements which had been effected upon their small holdings; while the more intelligent farmers acknowledged tenant-right to be a custom based upon some ancient agreement or understanding between landlord and tenant, which had come down to their day in force. If they succeeded their parents, for example, the tenant-right to this custom was valued to them at £10 per acre, with the sanction of the landlord; and if they purchased their tenant-right of another, the same rule applied. In the details of tenure there was as great a diversity as there is in the United Kingdom. The latter plea of "custom" conveys the true meaning of the right as between outgoing and incoming tenant; but as the original agreement upon which this custom is based has reference either to improvements made, or to the linen trade, or to the fining down of rent, it may be otherwise as between landlord and tenant, and hence, eventually, between tenants. But so long as the tenant in possession keeps his land in a profitable crop-bearing condition, and houses, fences, &c., in a tenantable state, either the landlord or his incoming tenant will have the £10, or whatever the sum per acre may be, to pay; but when farms get out of order, when wages become higher, and when competition for small farms becomes low, then inevitable losses must be borne chiefly by the tenant in possession, should his landlord prove austere in looking after his own rights. And as this applies to a large area of Ulster, the general conclusion is manifest; for the race of progress is now so rapid that unless landlords and tenants get their capitals quickly out of the land, the chances are ten to one that they will never see their money again.

As the incoming tenant pays the tenant-right, it is manifestly no security to a tenant in possession of the continuation of his lease. True, the tenant who receives a notice to quit may have "Tommy Downshire and Brothers," or some such garian authority, at his back! But although it cannot be nied that hitherto such interposition has had a more power- l influence in preventing the removal of tenants and the solidation of farms in Ulster than the value of the tenant- right, it is nevertheless to be hoped that this old agrarian ne will, with the progress of civil and religious order, be- me at no distant date obsolete. At all events, it has ady ceased to be either a safe or honourable guarantee to nants' capital in small farms. In the plain outspoken lan- ge of practice, the time has now come when both small mers and large farmers must keep their farms in proper er; otherwise, "to the dogs" is the rule. And this is not ; for more money must be put into the land than hitherto, re either large farmers or small can pay their rent and ; and live they must, in a better style of houses and cir- stances than the Ulster system of tenant-right under bad ing affords. In short, lands, houses, and everything must put and kept in order at a large investment of tenants' al, without any increase of tenant-right; so that the nt farms are thus put in order they are worth the money e landlord at any time for the work of consolidation—a already in progress. As yet, the work of consolidation be slow in most counties of the province of Ulster; and y large farms, in the English sense of the term, may e the rule; but slow as the movement may be at pre- is nevertheless proceeding at an accelerated speed, and ually be completed sooner than present circumstances

n questionable if the tenant-right will maintain its value. The reason of this is obvious, for it forms a of stock-jobbing in which a large amount of money' is needy tenants by small capitalists, who look sharply their interest when the flax or pig is sold—often leaving llord the alternative of falling back upon the tenant- for payment of arrears of rent, when the screw is put withdraw their capitals; consequently, if landowners to demand the punctual payment of their rents without ing tenant-right as a security, more especially in all where the lands are allowed to get out of order, the on of such money-lenders would be far more precarious it is at present; consequently, their terms would be more the tenant who with £50 in his pocket wishes to another £50 in order to purchase the tenant-right of acres holding. Other tenants get into difficulties, and obliged to borrow money on the security of their tenant- ; and these will experience more and more difficulty in so. In short, the money spent and the money lent have many cases nothing whatever to do with the profitable tment of tenants' capital in farming; so that, looking at facts of the case as we find them, it appears to us very tionable if tenant-right will maintain its present value in estimation of either landowner, tenant, or money-lender, the former will not much longer give it credit for rent; latter will not give it credit for its current value as a safe ity for his capital; while the progress of things will l tenants to look more and more closely after their y, in order to realize its full value when properly invested rming.

is only when money is properly invested in farming that land returns interest in the form of produce. Much of is now spent in buildings, drainage, and the like by land- s, and in manure and tillage by tenants, is virtually y thrown away—so that neither has a right to look to ther for interest, or the redemption of capital. In point , it is the land that pays the interest on the capital; and interest is of necessity therefore redeeming interest, be- all such investments are but of short duration, it follows the redeeming term should be of a corresponding length. tenant who invests his capital in buildings, drainage, and like, and expects that intelligent people will pay him the y thus invested a hundred years hence, or even at the y of half that term, will very soon be reckoned worse a fool or a madman; and he who invests his money in o, and cannot take it out of the land in one rotation cropping, should be sent back to school to learm the A B C his profession. On all questions of this kind the plain ter-of-fact view of things is fast setting landlords and nts everywhere upon their own feet. The rule is fast be- ing absolute that landowners must perform their own timate part of the work in the investment of all the capital required upon their estates in what is usually termed permanent improvements, while outgoing and incoming tenants are learning to settle accounts according to actual cash balances; and however much the province of Ulster may yet be subject to the exception, the difference tells heavily against her landlords, tenants, and labourers in the meantime; but the day is not far distant when those who have their money invested in tenant-right in the agrarian battle of Irish landlordism, at comparatively no interest, or who are paying long interest to money-jobbers for capital that was spent in other channels than farming, will see the length and breadth of their short-sighted policy, and thus make an effort and a sacrifice so as to get under the more profitable rule. In other words, Ulster tenants will "see themselves as others see 'em," and strive to get under the new and more profitable rule in the best way they can; and in this they will find less and less difficulty annually in transferring their labour and capital to trade or to our colonies, so as to co-operate with landowners in the consolidation of small holdings; while money-lenders will find it their interest, as the social circumstances of the country improve, to invest their small capitals in the more legitimate resources of manufacturing and commercial industry.

The Ulster tenant-right affords no adequate security to landlords for the payment of their rent. We know several tenants whose farms fell into the landlords' hands in payment of rent, and what was the empty bubble worth to them? In other words, for ten years the landlord received no rent—when the holdings were accepted in payment of arrears—which, in plain English, was no payment of rent at all, as the land was in a ruinous state, requiring a large outlay to place it in a profitably crop-bearing and tenantable state. And as more than half the area of that estate was below a fair crop-bearing state, the conclusion is manifest; for were the competition for small farms to cease, and were landowners forced to consolidate and improve their lands before they could let them to tenants of skill and capital, the allowing of tenants to fall into arrears of rent under such a security is manifestly the broad road to ruin. The tenant-right affords a precarious security to money-lenders who job in stock of this kind; but this, instead of being any security to the landlord, is the reverse, for it is undermining the fee-simple or landowner's capital invested. To let poor tenants, who are under the close watching and tender mercies of this money-lending fraternity, fall into arrears of rent when they get into difficulties, is not only a short-sighted but cruel policy. One requires to visit the holdings of these poor people, to hear their trying tale of hardships, and to see the whole facts of the case, to understand their position and the value of tenant-right security to them for rent. But for the magic spell which warps the souls of these poor people to "tenant-right," they could not endure half the hunting "cat and mouse worrying" they receive at the hands of their kind friends the money-lenders, who keep them in their holdings as long as they can hold their heads above the water?

Lastly, the investment of tenants' capital in "Ulster tenant-right" is a thankless security to tenants. Thus, if it now requires £10 an acre to farm land successfully, the landlord doing his own work of building, draining, &c.: it will cost the Ulster tenant, who has tenant-right to pay and the landlord's work also to perform, nearly three times this money, or £30, so that he can farm only one-third the area of land the English farmer can do with a given amount of capital; while for the £10 invested in tenant-right he receives no interest, in the vast majority of cases, and not more than half the interest for the money invested in buildings and the like, as landlord's capital, to which he would be entitled for "tenant's capital," running at the same time all the risk on both the former two investments, owing to their being less or more imperfectly performed, expensive to keep up, and liable to get out of date before they are worn out and redeem themselves. In short, tenants are entitled to larger interest than landlords, and the farmer who invests his own spare capital or borrowed capital to save his landlord's pocket is a far way behind the age in which he lives.

JUSTITIA.

MANURE.—The *American Agriculturist* says: "Manure is like money. No farmer ever has too much of it who appreciates in what his wealth lies." And it may also be added that, like money, the more a man has the easier it is to get more.

THE EFFECTS OF THE GAME LAWS ON AGRICULTURE.

At a special meeting of the Logie and Lecropt Farmers' Club, held in the Westerton Arms, Bridge of Allan, Mr. Wm. Henderson, Craigarnhall, in the chair, the following paper was read by Mr. Anderson, Westlees:—

It has been said that farmers are a discontented class of men, that they are always complaining—in wet weather or dry, in fair weather or foul, they still complain. But when it is considered that farmers are entrusted with the providing of the staff of life to the whole community, and labouring with industrious perseverance to accomplish that object, and in that endeavour they have many obstacles to contend with to augment their care and disturb their peace, of which other classes of the community are little aware—the soil and climate must be taken into consideration in the preparation for the most suitable crop for the greatest production—and all that they grow or rear, whether grain or live stock, are subject to diseases—such as the potato disease and cattle plague, over which they have no control, and for which no cure has yet been discovered—I will only mention a few of great number of other pests that affect the interest of the farmer, and try his patience, which I think will suffice to show that he suffers more in silence and without complaint than any other class of the community. The rat and the mouse tribe are pests that cease not plundering the farmer's goods either by day or night; and I believe this season they are unusually prolific, so he may naturally anticipate greater loss and anxiety on that score. Of course he has power to stamp these out, yet a very difficult task. The late Mr. Smith, of Deanston, valued the cost of the keep of a rat for a year at 40s., and four mice to be equal to one rat—at 10s. each a year. Who can estimate the amount of loss caused by these pilferers? but all farmers feel it. Of the rabbit, Mr. Smith said that six would eat as much as one sheep, and four hares as much as one; the amount of crop they eat and trample under their feet, and the grass they foul and render useless, must be great; and though the loss cannot well be estimated it must be very considerable. The crow and the wood-pigeon pest—the greatest, I believe, of all pests, inasmuch as they are the greatest devourers of grain—are increasing at a fearful rate in number, that if not immediately checked they will consume the principal part of the crop of this country. Are farmers to look timidly on and allow their crops to be thus destroyed by these vermin pests, without making a combined effort, by every conceivable means in their power, to stamp them out?—a destruction that leaves not the shadow of a loss behind to neither county nor burgh, but a general benefit to all. These Paul Jones of robbers cease not their pilfering all the year round; in November they are behind the wheat-sower, picking up what he sows, and continue destroying till frost locks up what is still left in the ground from their voracious appetites. They then direct their attention to the turnip crop, and which failing, they attack the stacks, and pick the ears through the thatch; to the spring sowing they pay prompt attention, and when the potato blade appears they are also there, and not content with the blade, they dive to the root and devour it; no sooner is the wheat and barley in the ear than they are still at work there. The enterprising farmer, who grows the heaviest crop, at much expense and labour, suffers the greatest loss. His luxuriant crop is laid by its weight, and there they have their rendezvous; and when he may have reason to expect a satisfactory production, he finds to his sad loss that his crop, by these destroyers, is thrashed before it is shorn. If this vermin pest is allowed to go on any longer, the ruin of the farmer is inevitable. But let us endeavour to prevent that disaster, by calling on other clubs to go in, as in a combined effort, if not to stamp out the pest entirely, at least to reduce the number of the vermin, so as not to become a plague. And for that end it was essentially necessary to get the co-operation of proprietors of rookeries and woods that shelter wood-pigeons. Were these proprietors to give liberty to the public, at this season of the year, to shoot young crows before taking the wing, the crow pest would soon be numbered among the things that were; and also give instruction to their gamekeepers to destroy the eggs of the wood-pigeons, and kill them by every means they can think of, w shall very soon get rid of them. The farmer may then ly down his head on the pillow of rest, and sleep soundly, not fearing that his property is being destroyed while he sleeps; and thus secured from ruin—his proprietor made sure of his rent, and the public secured of their loaf. These destroyers o the farmer's peace and property may be likened to a w appointed manufactory, the governor of which requires have a day and night shift of men to satisfy demand. S are these vermin pilferers; no sooner does the sun go dow the west than they issue forth from their lurking places, begin their work of destruction until the sun arise in the when another shift will take the wing of the morning, and to the field of onslaught, till his going down calls them ho to their roost. All these enemies has the farmer to com and but for his economical habits and industrious persevera he could scarcely have a rag on his back, or rather, he wo have nothing but rags to put on. I feel confident, from liberal and kind character of the proprietors of this distr that if the case was fairly represented to them, they would once lend us their aid in stamping out these pests, and influe other proprietors to go and do likewise. Then shall the far rise to that independent position which his capital and sci tific knowledge of his profession justly entitles him.

The **Chairman**: Seeing that vermin and wild animals dig nified by the aristocratic name of game, are such a loss to th farmer and all connected with the cultivation of the soil, an have now become such a widespread evil as to stand as a bar i the way of the success of the farmer, and from the great increa of vermin so called consequent on the preservation of what i called game, the whole system of game preserving has becom a common nuisance. As to the first position, that game an vermin occasion an immense loss to the grain farmer, it ha been again and again proved beyond the power of contradiction. The evidence laid before a committee of the House o Commons twenty years ago, on game and game preserving, showed to the satisfaction of any reasonable man the loss sustained then; and no man can dispute that it has increased te-fold since; that to have wild beasts, or any beasts, going a large through the crops and wasting them at pleasure, an still be told they do no harm, is too ridiculous to get man sane men foolish enough to assert; yet we still find men u reasonable enough to persist in this absurd system, sheltere under an unjust law, or rather laws, for they are legion. W cannot easily find a parallel to such a piece of absurdity, tha in a civilized country any class of men—be who they may—should have it in their power to keep a stock of brutes protected and licensed by the laws of the land to plunder an pillage wherever they have a liking—thus to give wild beast a ticket-of-leave or free pass to commit all kinds of thievin with impunity. Then as to my position that vermin an game have to all intents and purposes become a common nuisance. After a farmer has invested £10 and upwards an ac on the soil of his farm, and then to have it over-run by wi beasts that he can neither frighten away nor destroy—if w omit one class, few will be found but will give their asse that this is a nuisance. Even those that the farmer is by la allowed to frighten off or kill, have so increased under th game-preserving system, that he is constantly kept on the ra so as to preserve part of his crops from destruction; that h can preserve the whole now is totally impossible. The peac the comfort, and the property of the farmer is thus injure An equivalent amount of injury done to any other class of H Majesty's subjects would be considered a nuisance, and wh not grant to the farmer the same privilege that other class already enjoy? The farmer has clearly a right to come forwa and demand that equal justice be done him. Begging, mendicancy, and vagrancy are put down as a nuisance by commo consent; how should wild animals be allowed a privile denied to mankind? The simple and only reason is that a certain class of great men claim some kind of kindred to thes wild beasts—a kindred, by-the-bye, not easily defined. Thos who harbour beggars and vagrants are punishable by law; whil who harbour vermin and game about them, although ing immeasurably more injury, are amenable to no law. We here the forest laws of a barbarous age now called the laws, and by additional enactments up to 1862, made barbarous to suit the requirements of a civilised age. If, vermin, game and the game laws are not a common nuise, one is at a loss what to term a nuisance. Any altera- or abolition of the game laws, we are told, would be an ingement on the rights of property. The rights of pro- y are every day interfered with for the public good; the ietor of the public-house may have his property reduced pounds sterling by being refused a license, the ostensible being for the good of the public, the apparent cause often for the disadvantage of the poacher; cattle that have in contact with others that have the plague, the owner a fourth. These are unquestionably greater losses to poor man than the game would be to the rich. The crime ioned by these one-sided laws is incalculable; the great of the people view these laws as being unjust—only a of class legislation to serve the great. The last enact- of 1862 is held in detestation—stealthily brought in at of the session, and passed before the public in general ware of it: by this act the bare suspicion by a game- or a policeman places one entirely at their mercy; any ing in our fields may by order of either require to our pockets and show their contents; the honest or shepherd with his dinner in his pocket is bound, ded, to do the same. Can we be surprised then do not oftener take place?—can any man with od in his veins be much found fault with, although a fellow down for such a piece of lawful insolence? lence of the keeper generally leads to poaching, leads to a Court of Justices of the Peace, who, eyes of the many, in game cases, act the part of That the poacher is sympathised with on the the public cannot be hid, and that his sentence is he cannot but hear. That all the sentences of the are according to law in game cases is very doubtful, those who wish to inquire I would refer them to Sheriff 's "Curiosities of the Game Laws." The temptation to commit crime by preserving game is something to that of the gill-shop: no other class of society but her would be allowed to hold out such a temptation to We hear and see much of what poaching leads to; leads to higher crimes is evident. The poacher, how- after all, is only the cruel, brutal ruffian outside the law the sportsman, or rather game slaughterer, is within the the same cruelty, brutality, and lowness of feeling seems vade the whole brotherhood. What can point out a man or no feeling more than to breed and half-tame animals sheer pleasure it gives him to slaughter them, or rather im, mutilate, and kill by a slow and lingering death? of the common classes is quite at a loss to conceive what the great man can find in the squeak of the dying hare, what pleasure he can look on the last agonies of the pheasant. More unfeeling and degrading work than es not exist. Were such cruelties practised by the lower all kinds of laws would be made for its suppression. put down dog and cock fighting, and tolerate the battue? degrading and cruel scenes than the slaughter of game hundred cannot be well imagined. This is clearly a for the Society for the Prevention of Cruelty to Animals. ife of the poacher leads to evil, the life of the sportsman tend to much good; for what can these scenes befit a but for acts of inhumanity and savageness? Were men ed to act over again the tragical scenes lately reported to been acted in Jamaica — scenes that we may well be ed of—then let us go to these wholesale bloodshedders men for such exploits. As nothing we can do can cope the widespread evil we have been talking of but some lative alteration, let us therefore at once proceed to peti- both Houses of Parliament. That we will not be listened is only what past experience would lead us to expect. The ers, however, have themselves to blame for sending men who will neither listen to reason nor common sense— who seem to have a warmer side to game and its advance- than to the lower classes, for all the pretence they have their desire for the enfranchisement of the working man.

The SECRETARY: The preserving of game is an evil in ways. First, it encourages immorality; it is the handmaid of oppression; it encourages blackguardism—wherever you find a poacher, in him you find an idle lazy fellow; you find, in fact, a person that will not hesitate to commit any crime. It produces pauperism. The poacher is imprisoned, he is prosecuted by the public funds, his family have to be fed and clad either in a poorhouse or in a workhouse, all at the public expense. How often do we hear of bloodshed and murder when watchers and poachers come in contact! All this must be placed to the account of game-preserving. Gentlemen, you will naturally ask what is the cure for all this evil? I answer, abolish the game laws; take away the temptation, and you abolish the crime. They are unjust and oppressive to the tenant-farmer, for although he labours and sows, another reaps. We are often told that farmers should make more inquiry before they enter into leases. But how can the statistics be taken of game? Can they be counted? Proprietors' lands are so often entwined the one with the other, that although you take a farm from one proprietor, who is not a game preserver, your crops are devoured by the game from the cover of a neighbouring proprietor who is a game preserver. We have already heard to-night that it is to game-preserving that we have to look for the tremendous increase of crows and wood-pigeons and sparrows which devour our crops, by gamekeepers shooting hawks and other animals which used to keep these in check. We are told that landed proprietors have the right to keep on their own property what they choose. We would assuredly say so too. Let them go to India and Africa and select what they choose, and take them home and stock their preserves with them; but let them keep them there, and not let them devour that which is the property of others. All these amusements are only a mere morbid desire for sensual pleasure. How many days of weary toil, and nights of anxious care—how much of the industrious tenant's money is expended on the raising of these crops, from which he has hoped for a fair return; but, alas, only to be crowned by the bitter blast of disappointment! The cultivators of the soil surely deserve better things from the hands of the landed proprietors than to be the means of their ruin. Farmers cannot be so easily imported into this country as German tailors. By the perpetuation of these laws it is only setting class against class. They are only a feudal remnant of vassalage. Why should owners and occupiers of the soil appear in antagonism to each other? Should they not rather form an alliance, offensive and defensive, with each other, to protect their mutual interests? We should say to these vermin preservers, let them not only be wise, but wise in time. We hear much of Britain's greatness, and of her industry and enterprise, and independence, and last, and not least of all, her intelligence. Why should these relics of iniquity be a blot on her fair fame?

Mr. FINLAYSON (Pendreich): I may say that the over-abundance of crows and wood-pigeons must be traced to game-preserving; rabbits also, which, from their breeding powers and destructive qualities, often prove a great grievance to the farmer, are reared under the shelter of the game laws. Nor can one close his eyes to the fact that discontent, discord, ill-will, hatred, contention, strife, and vice, are the legitimate progeny of these feudal laws—that they are bred by them as in a hot-bed. It passes conception how these relics of barbarous times should stand the light of the nineteenth century. One might think that the like of the "Blairingone murder" might lead people to see the evil of laws that nurse and gradually bring up men to take the life of their fellow. It is well enough known that when a poacher is unsuccessful in getting game, he is tempted to try something, and not liking to go home with an empty bag, to an empty house it may be, he will almost try anything—not excepting even murder itself. Besides, think on the enormous expense the maintenance of these laws entail on the community, in prosecuting criminal cases, which but for them would never exist. Nor can it be anything short of crime against the laws of common sense, of humanity, and of God, to trample under foot the food of the people, as is often done to an alarming extent. These laws are a great barrier in the way of industry and improvement—a festering sore in our social system that will not heal. And the bringing up and protecting of wild beasts for the mere sport of killing them, must be barbarous in the extreme, and ought to be punished as cruelty to animals.

Mr. PEAT (Manor): Mr. Anderson, in his paper, points out very plainly a number of the pests of the farm, and a rate by which the farmer can calculate the extent of the cost of harbouring or maintaining them. So far as the depredations of rats and mice go, the farmer has himself alone to blame if he allows them to multiply to an undue extent, and occasion loss about his premises. I believe it is impossible to exterminate them, but by keeping continual war against them they can be kept under, so that loss caused by them may be trifling. We have not the same opportunities, however, of exterminating the wood-pigeons and crows. The crops suffer much by their depredations in spring, and more especially the wheat crop a few weeks before harvest. It being difficult to get within shot of them in the open fields, few are killed there; and the numerous rookeries and roads in this district affording both shelter and protection to them all the year round, and to which those on whom they live have neither access nor control, is, I think, the chief cause of their abundance. Were the proprietors of these rookeries, fully aware of the extent of the injury their tenants occasion to the crops, they would surely move in some way or other to lessen the evil. As for game, I am little annoyed by it. There is no shelter for game on my farm, and, being intersected by the turnpike, is, I suppose, the reason so few recorded in that notable list take up their abode on it. And as for the game laws, they are productive of so little real good, and the origin of so much misery and mischief, that they ought to be abolished. They are often the cause of contention between landlord and tenant, and are altogether a nuisance, and antagonistic to the spirit of the times in which we live.

After the usual vote of thanks, the Club adjourned.

ANOTHER CHAPTER ON THISTLES.

SIR,—In your issue for July (page 5), there is "A Chapter on Thistles," by "A Practical Farmer." I give this thoroughly good-natured and well-meaning gentleman every credit for his good intentions; but I am perfectly ashamed to own that, although I come from the Land of the Thistle, I cannot for the life of me make out what species of thistles your correspondent has been pestered with; and, as many of your readers may not be better informed than I am, it may be worth while to examine the history of our native thistles, in order to show the value of botanical description, even on the subject of weeds.

Your correspondent speaks of the "three prominent varieties"—*i. e.:*

"The common thistle (saw-wort),"
"The broad spike-leaved thistle," and
"The low, creeping, or bulbous-rooted thistle."

Now it is all very well to scold the thistle, and even to give it no quarter; for if ever plant had the trail of the serpent marked in black letters on its head, it is this very plant, horrid in aspect, and armed, leaf and flower, from head to heel (chapter and verse, "thorns and thistles," clear as noonday). Had the locality of your correspondent's thistles been other than a corn-field or pasture-field, I might have thought the "Practical Farmer" was referring to the badge of Scotland, the veritable emblematic thistle of my native land being fully six feet high, and forming a bush quite as wide as it is high; but, as this handsome biennial is not a native of Britain, it could not be the thistle in question. Moreover, he speaks of pulling his full-grown thistles up with "tweezers;" but, alas! this species would need the aid of a cart-horse to draw it out of the ground.

The following are really British thistles (natives "all told"); and I shall give some little description of each, to show how difficult it is to tell even the names of our common thistles:

St. Barnaby's Thistle *(Centauria solsticialis)*.—Yellow flowers, and blooms at midsummer. Annual. Rare in corn-fields.

Star Thistle *(Centauria calcitrapa)*.—Rose-cloured flowers, growing in stony ground.

Blessed Virgin Mary's Thistle *(Silybum Marianum)*.—Purple flowers, and white veins on the foliage; growing to the height of a man, usually in hedge-banks of rich earth.

Calton Thistle *(Onopordum acanthium)*.—Biennial. Tall, with small purple flowers, growing in stony places.

Sow Thistle *(Sonchus arvensis*, and others).—This is the milky thistle, "milky dazel" of the West of England.

Carline Thistle *(Carlina vulgaris)*.—Biennial. A weed in dry pastures, flowering in June, growing to the height of one foot.

English Thistle *(Cirsium anglicum)*.—Perennial weed, with purple flowers, growing in pasture-fields, to the height of three or four feet, and flowering in June.

Besides the above thistles, qualified by common names, I have carefully gone through the botanical lists of British thistles, to see if such a plant had ever been heard of as a bulbous-rooted thistle. Any one at all acquainted with the habits of plants would, *à priori*, suspect the thistle to be quite out of the bulb line. There is no such plant know among herbs indigenous to Britain.

There is only one tuberous-rooted thistle *(Cirsium tube rosum)*, known only as a rare plant, found in our woods, an flowering in August.

In the "Hortus Britannicus," 1830 and 1832, there ar only two species of saw-wort given as natives of Britain; an as one of them—*Serratula alpina*—is only a few inches i height (a rather scarce Alpine species, with a purple flower) it could not be the saw-wort of your correspondent: and th other is the *Serratula tinctoria*, used for dyeing, as its nam implies. It is, therefore, not at all likely that this cultivate plant pestered his farm. But, under the generic name o *Cirsium* and specific name *arvense*, I find that this perenni pest of corn-field, road-side, and everywhere had once bee called *Serratula arvensis*, *Carduus arvensis*, and (by J. E Smith, in "Floræ Britannicæ," 1816) *Cnicus arvensis*.

So much for your correspondent's common thistle, whic for distinction he calls "saw-wort."

The "broad spike-leaved thistle," from the descriptio given, must be a well-to-do kind of thistle, as your correspondent says "it leaves a wide, circular bed when dug up." Now, although most plantsmen will have a shrewd guess that this fine burly fellow is an old acquaintance, the delight of goldfinches in autumn, and at all times the terror of man or beast that may come in contact with its spines (the ass only excepted(, your readers will naturally ask for accurate information.

For example, when your correspondent speaks of thistle dying after they have flowered, we know that he is speakin of the annual or biennial species, and certainly not of th perennial kinds, which have two strings to their bow, an propagate by seeds and by adventitious buds—"tillering," your correspondent terms it, or, as J. E. Smith graphical describes his *Cnicus arvensis*, "having a creeping root, ten cious of life."

On the face of the Weaver Hills, in Staffordshire, I fou two old women, employed by the farmer who was owner the land as well as occupier, and was moreover in holy orde The hill is some 1,300 feet above sea-level, and, though hig is covered with excellent pasture grass, being on the lim stone; and this good man's hill-pasture was pestered wi thistles: and I will state in plain terms the practical way th he set about keeping them in bounds.

The elderly couple above mentioned were duly hired at 10 per day, and sent to the hill, to whittle with their own kniv every thistle they could see. Now this is precisely the advi your "Practical Farmer" has given us in your valuable pap of 25th June. Theory and practice frequently diverge; a the owner of the Weaver Hill pasture found it so, for n sooner had the two old women got to the hill than they commenced gossiping, and they had to be separated, and when saw them in good working order, one hundred acres at lea of lone hillside lay between them, and the proprietor rode surefooted pony round the hill, to make sure that those had parted so carefully and paid so well should make dilig search for thistles.

ALEX. FORSYTH.

13, *Islington-square, Salford, Manchester*.

THE MAKING OF CLOVER HAY.

There is no difficulty in ' making hay while the sun nes," but in showery and precarious weather it is an tremely difficult task to secure hay in good condition, d more particularly clover hay. It is so soon injured y summer showers, and quite spoilt by a short season of ntinuous rains. It is a very valuable acquisition to the n provender when "well got," and therefore richly erves the closest attention and care of every farmer in perly making it. I will give a few suggestions re- ive to its management. Clover intended for hay should mown at that precise point in its growth when about -third of the flowers are going out of bloom. It has arrived at its greatest average increase. From this d the stalks begin to harden and decay, the leaf falls, the quality quickly degenerates. If mown prior to riod the crop will shrink too much in drying or g and of course a less weight of hay is harvested. atters ought in every season to be carefully at- . It requires no great exercise of judgment to when the clover crop is in a proper state for and then have it done as speedily as possible. dern improvement of mowing by "grass mowers" ded acquisition in clover-hay-making. The regu- y which the green clover falls back over the bar of tting knife—" the knife bar"—makes it more evenly ted over the field than it could be by the hay- r's fork. It is merely in some heavy plots that the s requisite to spread more evenly. For the most if the crop is not exceedingly good, but little labour will be requisite, as the clover is best urbed while drying; and if the weather is it may be put together and harvested with- further trouble. The great thing in clover aking is to move it as little as possible, in order to ent the leaf from falling. It is poor fodder when the is gone, which will soon be the case upon repeatedly ing it or shaking it out. Hence the better course is let it lie still till it is sufficiently withered and dried, then carefully to put it into small "cocks" till it is nient to cart it. The sooner this is done the better, is only in a fit state; but if it is from necessity or fickleness of the season put together in indifferent ition, it had better remain a few days in cock before g, and upon the day of carting the cocks should r be turned over or parted asunder, so as to give the air and time for drying and recovering its condition, wise it will generally mould in the stack and become ly worthless. Of course all these little matters must ttended to with judgment. No farmer would try to or turn out his hay-cocks in unsuitable weather. In ary mowing by the common scythe more labour and tion is requisite. The swathes should lie a day or undisturbed till the top is somewhat withered, but so much as to cause the leaf to fall. It should all be carefully, not roughly, turned over, and be left tly raised, so that air and wind can pass under the the. If it can be left in this way, and the weather is ble, it will soon be ready for putting into cock, where will improve in condition for a few days in fine wea- r, should leading of necessity be deferred. It is better put it into cock somewhat out of condition rather than repeated turnings to lose the leaf. In open windy ther "it makes" in the cock with considerable advan- . It is not like meadow hay, which goes so closely gether into cock that the air can scarcely penetrate. Not so clover hay: the air readily finds entrance because it lies lightly. I have often ventured to put clover hay into cock before it was properly withered, and by no means dry, trusting to sun and winds to improve it, which in succeeding fine weather they will invariably do, and that effectually. In thoroughly wet seasons this crop is so greatly injured as to be of little value, and in many cases can only be used as litter. This is very annoying to the farmer undoubtedly; but there is very little help for it. Nearly all that can be done is to be watchful, and, as opportunity serves, try and secure a little. It is good practice to cut early, if the weather is propitious; if it is, however, very wet and stormy, by all means let the crop alone, and await a change. It is better to have hay of coarse quality than none at all. If it is cut, and heavy rains ensue, the better course is to let the swathes lie till the weather does abate—even so long that the young clover may be seen making its way through the swathe. Should the weather at length be suitable, a considerable quantity of useful fodder may yet be saved. It must not, however, be put into cock, but forked out of the swathe, and be at once put upon the carriage for stacking. I have occasionally experienced these untoward seasons for clover haymaking, and have suffered severely in consequence. On one occasion I succeeded in making a useful fodder by stacking this decaying clover in layers with wheat-straw. It imparted a little of its nutritive qualities to the wheat-straw, which in good turn kept the clover-hay from actually spoiling. In dry and hot seasons, clover-hay does not require any making whatever. It is good practice to permit the swathes to lie till the hay is sun-dried and well withered, when it may be advantageously carted from the swathe. Very many light crops may thus be secured in average seasons; but heavy crops will generally require a little aid even in the hottest seasons. In reference to stacking clover-hay, I would observe that it is good practice to stack it in "ricks" or long stacks. It is not so liable to heat in stack as meadow-hay, but it will do so occasionally if out of condition. To prevent this, chimneys should be made as the stacking proceeds. This is easily done by stacking around a common chaff-skep, or a well-stuffed sack, taking care to draw them up very gradually as the work proceeds, and as perpendicularly as possible—failing this, the chimneys close as the stack settles. There is some danger to the quality of the hay from this course. If the hay be so far out of condition as to take a great heat, the holes or chimneys cannot be too open and clear; but if the heat be only partial, then care is requisite to keep in so much heat as will suffice to cause the stack to dry itself, otherwise if it escape too rapidly and too far the moisture retained will endanger the stack by causing the hay to mould. This mode of preventing over-heating requires careful attention and good judgment to decide as to the proper time for closing the chimneys. The chief guide in this respect will be the odour of the hay. If it smells at all like sweet hay there is no danger; but if the smell is unsavoury, faint, and sour, there is something wrong, and most probably the chimneys will require immediate closing to keep in the heat, so as to absorb the moisture. It does sometimes occur that these clover ricks do get over-heated; happily, it is a rare case. When this is the fact, the best course is to cut a chimney down to the hottest place, and cautiously take out the semi-burning hay; dash upon it water, and then remove it to be spread upon the ground. On no account proceed to cut through to the hot place from the side. The air current thus let in will very probably cause it to take fire at once. Hot and over-heated stacks should always be cut from above; and, if requisite, water in limited quantity may be thrown upon the hay as the cutting proceeds. In this way stacks may always be kept from taking fire, provided that they are seen to in good time. It is unpardonable to permit a stack to take fire, without first making the attempt to let out the heat. Its state is easily discoverable: the scent of burning hay is so well known, and that is the test for everyone's guidance.

P. F.

DAVIS GARRET'S DAIRY FARM.

We paid a visit recently to the above farm in Delaware county, about eight miles from Philadelphia. It is located in the great dairy section, which has given the reputation to Philadelphia butter, abounding in fine pasturage, pure springs of cool water, and a rolling surface proverbial for healthiness to man and beast. This was, till recently, a butter farm, but for special reasons, it is now a milk instead of a butter dairy; but the management of the cows and pastures are substantially the same, the object being, in each case, to support without injury to the land the greatest number of cows, and to obtain from them the greatest yield of milk continued for the longest practicable period of the year.

There are some features in Davis Garret's system which we thought worthy of record. In order to secure the largest quantity of green succulent food, for the longest period, he depends on orchard grass, rye sown in the fall for early spring cutting, and sown corn fodder. Without these three requisites he considers he cannot profitably carry on the dairy business for either milk or butter. His practice for several years confirms what we have before urged in this paper, of the value of orchard grass on a dairy farm, its growing through the season, coming forward very early in the spring, and by its quantity of fibrous root rather improving than exhausting the land, when fed or cut before it gets old, making excellent pasture and hay. D. G. expressed this opinion while his cows on one occasion had greatly lost condition when fed on pure timothy hay, or as he expressed to us would have starved to death, if he had not given them something else. They always thrive and do well on orchard-grass hay cut young. He sows two bushels to the acre, while walking before the wheat drill in the fall and sowing it broadcast. This larger quantity of seed to the acre than usual he considers important to prevent its growing in tussocks or bunches. We have never observed finer fall pasture than his orchard grass fields presented. The usual amount of timothy and clover is also sown with the orchard grass, but this latter takes entire possession after the second season.

On the farm of 100 acres, about three acres each of rye and corn fodder are sown annually. The cutting of rye, which is hauled in a hay bed to the barn daily, commences about the middle of April, some three to four weeks before time to turn out to pasture, and continues till the middle or last of May. The cows greatly relish it, and a large increase of milk immediately results. There are also two other advantages. 1st, Every farmer knows that the sudden change, after a long winter on dry food to fresh pasture *(ad libitum)*, often proves a drawback to stock for two or three weeks, till they become used to it. By giving green food in the stable, the feeding is more under control, and no diarrhœa or other bad consequences follow. The change is more moderate and gradual, and by the time they are turned out the system is accustomed to the food. 2nd. The pasture fields, instead of being eaten entirely bare, as is often seen in the first few weeks of spring, get a good start, which seems to be retained through the season, the grass becoming firmer and probably more nutritious. Two full cuttings of the rye are obtained.

The use of sown fodder commences generally immediately after oat harvest. It is taken out to the pasture field in a waggon or hay bed and spread about. It makes an agreeable change of food for the cows, is eaten with avidity, and tells its tale in the increase of milk at that season. They are supplied with it daily till frost, when the balance of fodder is cured and deposited in the barn for winter to be cut up and fed with grain or shipstuffs, &c. The ground sown with fodder is ploughed up in time to seed with rye and orchard grass. The usual amount of stock on Davis Garret's farm is thirty cows, seven horses, and a flock of sheep. This is in addition to the fields occupied in the usual rotation of corn, oats, wheat, and potatoes. Without the six acres used as above described, he thinks only half this stock could be profitably kept. It sho be mentioned that the home place contains only 60 of the 1 acres, the balance being a mile off, in poor condition, and i used to keep his dry cows on. His crop of corn last season wa 400 bushels from less than six acres. One thing mentioned in the management of the cows was new to us—that after the *first frost* they were invariably stabled at night. Davis Garret had found that frosty grass eaten by the cows night and morning tended to dry up and decrease the milk. At this time, say the last of September, their food is always given to them in the stables, and they are only allowed the range of the pastures in the middle of the day. By this plan, instead of his cows going dry for three or four months, to the great loss of profit, he manages to keep them in milk, without exception, till near the time of calving. An uninterrupted supply of milk is th essential thing in a milk dairy, and D. Garret, watching clos any increase or diminution, and the cause of it, considers more profitable to keep a good lot of cows, when once obtain well up to their milk, than to have them go dry some three four months, or, as is the practice with some, sell to the butch and buy fresh cows at high prices to keep up a certain supp At this season about a peck of brewer's grains are given each cow night and morning, which is increased to double t quantity on the approach of cold weather and through t winter. This is occasionally changed or mixed with br middlings or ship-stuff, the whole incorporated with cut h or corn fodder, and moistened in large open boxes in the entr between the stables. In the cow stables we observed direc behind each cow, as she stands in the stall, an open troug eight or ten inches wide, and the same deep sunk in the grou and calculated to receive all the droppings. This deposit shovelled out daily, or conducted into the barnyard—an arrang ment which greatly promotes cleanliness of the cow and the sta

It was also remarked to us by Davis Garret that the slig protection given to his pasture-fields by the refuse sown fodd uneaten, which he allows to lie all winter, was always foun to be a very great benefit to the early vigorous growth of pasture he following spring.—*Morris' Rural Advertiser.*

SHEEP FARMING IN SOUTH AFRICA.

While it is no doubt satisfactory to find the progressive increase in our wool imports from South Africa, which have risen nearly 50 per cent. in the last three years, namely, from 20 million pounds in 1863 to 29½ million in 1865, yet the great bulk of this at present comes from the older Cape colony. Now looking at the vast capabilities of the interior and adjoining territories, we should like to see greater progress making in these districts, especially in British Kaffraria and Natal, in the supply of this very important raw material of commerce and British manufactures. Let us glance at Natal, for instance—a colony with an area of 20,000 square-miles, or 12,800,000 acres, not of the poor grazing-grounds of the Cape colony, but boasting everywhere good pasturage, a soil more or less rich and strong undergrowths. Now here comparatively little has yet been done in sheep-farming, the colonists having given more of their attention to the production of sugar, cotton, arrow-root, and other tropical products for which the coast regions are well suited. Cattle for draught or slaughter have certainly found more favour, the number marking about 242,000. The numbers of sheep in the colony in 1861 were only, however, about 77,000, but in 1863, 149,000, which is an increase in two years of 72,000. Of our large imports of African wool yearly, only about 1½ million pounds come from Natal, and the bulk of this is the produce of the Dutch settlers in the Transvael Republic and Orange River State. According to the official published returns the value of the wool exported from Natal was, in

1858	£11,368	1861	£32,888
1859	23,990	1862	38,432
1860	27,790	1863	48,526

The figures for the last two years are not accessible; but, judging by the enormous increase of sheep, the value of the shipment of wool in 1865 would show an excess of at least 50 per cent. Under the influence of a steady rise in the prices of wool of late years in England, of the lengthy experience and proved success that the colonists have now had in sheep-grazing, and with the assistance of a recently-formed association to promote the introduction of improved breeds from time to time, there is good ground for anticipating a direct and important advance in this branch of farming business.

Although it is only of late that an effort is being made in this direction, the increase of sheep will soon begin to tell upon the wealth of the colony; while the export of wool in 1863 was 75 per cent. in excess of the previous year, that of 1864 was 200 per cent. in excess of 1863, and the present year's imports, judging by late Natal papers, are likely to be larger than any previous year, the wool-stores at Durbar being literally crammed with wool, brought from the interior, waiting for shipment. Sheep farmers also assert that so far from the value of the animal being determined by the price of mutton, their profit is so large from other sources that they are content to keep the ewe for her produce in wool and lambs till her natural death. To this almost inexhaustible source of wealth the greatest and most serious drawback is the scab, which, from its highly contagious nature, as well as from its baneful effects on the wool and on the constitution of the sheep, is so justly dreaded. As the colony is yet so lightly stocked with sheep as to be entirely dependent upon fresh importations from the surrounding districts, in which the flocks are almost universally infected, any stringent laws forbidding the entrance of diseased sheep within the borders would be a virtual prohibition on the introduction of sheep into Natal, and would oppose a serious and almost insurmountable obstacle to the prosecution of an enterprise which now bids fair to become one of the chief elements of agricultural prosperity in Natal. The disease is by no means incurable; it is its sudden and often unavoidable propagation that constitutes its chief peril.

Sheep farming in Natal is very productive, and the capital required is small when compared with the proceeds.

Sheep are imported annually, and are generally improved in breed by the introduction of high blood. In 1855 Merinos were introduced from the Cape colony, which have thriven admirably. The consequence is that flocks are now spreading over the upland pastures in increasing numbers every year. The success which has attended sheep farming in Natal has in fact been so signal that the pursuit is becoming more and more the favourite one in the upland districts, and will, no doubt, ere long, secure to the occupants of these localities wealth and independence. Sheep farming, it is now accepted as an established fact, will prove in Natal as remunerative as in any part of the world.

The sheep-farmer possesses four distinct advantages over all other occupiers in Natal: First, the investment of capital may be anything he pleases—he may begin as well with fifty sheep as with a thousand; secondly, the current expenses are comparatively insignificant, amounting to little more than the wages of the native herdsmen; thirdly, the returns are both quick and considerable; fourthly, there is always an unlimited market for the sale of wool. No wonder, therefore, that so many young Englishmen are espousing this pleasant pursuit. There is a freedom and a healthfulness about the life, that suits the inclinations of the colonist and the climate of the colony, and that perhaps agrees better with English notions and predilections than do the stranger and more anxious speculations of the sugar or coffee planter.

Lambs cast in the colony invariably prove hardy and strong. The first clipping of the newly-carried sheep yields, on an average, 2lbs. of wool per head; subsequent clippings from 2½ to 4lbs. per head. Natal can depasture three or four sheep upon an acre of land; whereas, in Australia, an acre will not provide for more than one. The sheep in the colony keep up their condition satisfactorily, even during a somewhat lengthy dry season, finding plenty of sustenance on the alternate flats and elevated ranges of the northern counties. The Merino sheep, which in their native country are not considered by any means good nurses, appear to improve in this respect in Natal climate and pasturage.

But the wool-production of South-eastern Africa is not limited to Natal. There are great wastes of territory under savage rule, which are still neglected and unoccupied by industry. Little by little the territories of Kafferland are being narrowed, as British enterprize advances. Zululand, No Man's-land, and other adjoining vast tracts, are opening up for pastoral energy, and sheep and cattle will increase and multiply in these, for the benefit of the settler, and the advantage of manufacturing industry.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council, Wednesday, July 4.—Present, Lord Walsingham, vice-president, in the chair; the Earl of Powis, the Earl of Shrewsbury and Talbot, Lord Chesham, the Right Hon. the Speaker, Major-general the Hon. A. N. Hood, Sir A. K. Macdonald, Bart., Mr. Acland, M.P., Mr. Amos, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Jonas, Colonel Kingscote, M.P., Mr. Lawrence, Mr. Pain, Mr. Randell, Mr. Sanday, Mr. Shuttleworth, Mr. Robert Smith, Mr. Torr, Mr. Thompson, Mr. Turner, Mr. Wells, Mr. J. Wilson, Mr. Frere, and Dr. Voelcker.

The following new members were elected:—

Day, Thomas, 22, Dorset-street, London, W.
Hanbury, Osgood, jun., Howe Hatch, Brentwood.
Knight, Josiah, Millwich, Stone, Staffordshire.
Little, William, Picktree, Chester-le-Street.
Wentworth, Godfrey Hawksworth, Woolley Park, near Wakefield.

Finances.—Major-general the Hon. A. N. Hood, chairman, presented the report, from which it appeared that the secretary's receipts during the past month had been duly examined by the committee and by Messrs. Quilter, Ball, and Co., the Society's accountants, and found correct. The balance in the hands of the bankers on the 30th June was £1,702 0s. 11d. The quarterly statement of subscriptions and arrears to 30th June, and the quarterly cash account, were laid on the table. The committee recommended that with regard to those members in arrear of their subscriptions for 1861 and 1862, amounting to £55, the solicitors to the Society, Messrs. Garrard and James, be instructed to take such measures as they may think necessary to recover the amounts due. They had to report that they had received the deed of security duly executed by the secretary and his sureties for the due performance of his duties. An estimate of the receipts and expenditure for the current year, exclusive of the sum already voted (£500) for the 'Steam Cultivation Inquiry, was submitted for the consideration of the Council. This report was adopted.

Prize Essays.—Mr. Thompson, Chairman of the Journal Committee, announced the awards of the judges; and, the motto-papers having been opened by the Chairman, the names of the successful competitors were declared, as follows:

Class I. Farming of Leicestershire.—The prize of £50 to W. J. Moscrop, Esq., Kirkleatham, Redcar, Yorkshire. The papers bearing the mottoes "The cattle are grazing" and "Labor omnia vincit" were commended.

Class II. Farming of Worcestershire.—The prize of £50 to Clement Cadle, Esq., Land Agent, Gloucester.

Class III. Town Dairies.—The competing essays are not considered worthy of the prize.

Class IV. Mountain Breeds of Sheep.—The prize of £20 to H. H. Dixon, Esq., 10, Kensington-square, W. The paper bearing the motto "Soil and climate modify all animals" was highly commended, and "Mountaineer" commended.

Class VII. The Use to a Farmer of a Magnifying Glass.—The Prize of £15 to K. Bridgman, Esq., 69, St. Giles'-street, Norwich.

Steam Cultivation.—Mr. Thompson stated that the Committee recommended that members of the Inspection Committee (not acting as reporters) shall receive two guineas per diem each, and their travelling expenses, not including hotel-bills. The Committee were of opinion that this inquiry cannot be completed satisfactorily for the sum of £500 voted by the Council for this purpose, and recommended that they should be authorised to expend a sum not exceeding £1,000, though they considered it probable that the whole of that amount may not be required. It was then moved by Mr. Wells, seconded by Mr. Lawrence, and carried, that the Steam Cultivation Committee have power to spend, if necessary, an additional sum not exceeding £500.

Education.—The Committee, having received from the Examiners in Mechanics and Chemistry applied to Agriculture the marks obtained by the candidates entered for the special prizes at the recent Oxford Local Examinations, have awarded the following prizes, viz.:

I. Mechanics applied to Agriculture.

F. B. Kingdon, R. A. College, Cirencester	£5
H. R. Goddard, R. A. College, Cirencester	4
T. J. Elliott, R. A. College, Cirencester	3
J. L. Waldon, West Buckland	3

II. Chemistry applied to Agriculture.

F. B. Kingdon, R. A. College, Cirencester	£5
J. L. Waldon, West Buckland	4
H. R. Goddard, R. A. College, Cirencester	4

I. The Committee have resolved to offer the following principal prizes at the ensuing Cambridge Local Examinations in December, 1866:

I. To prizes for Candidates who answer papers to be set in Mechanics and Chemistry as applied to Agriculture. Open to Juniors and Seniors who have passed the Preliminary Examination as above, and also to any young men not exceeding 25 years of age (duly recommended).

Mechanics applied to Agriculture	£10
Chemistry applied to Agriculture	£10

	Junior.	Senior.
Candidates who obtain a Certificate, regard being had to their place in the General Class List	£5	£5
Candidates having passed the previous Examination, distinguished in—		
Pure Mathematics	5	5
Mixed Mathematics	5	5
Chemistry	5	5
Zoology	5	5
Geology	5	5
Botany	5	5

and that £30 be distributed in Secondary Prizes of £2 each among such of the candidates in the several classes as the Committee may judge most deserving.

II. The Committee further report that the number entered for the Society's prizes at the Oxford Local Examinations, which took place in June last, was only 45, whereas the number entered at the Cambridge Examinations in December, 1865, was 120. Under these circumstances they consider that it would be better to have only one examination in the year, and to try the experiment of giving in addition to the ordinary prizes, certain Senior and Junior Scholarships limited to the so of tenant-farmers, or of owners, if not exceeding 50 acres, occupying their own land. They recomme therefore, the Council to authorise them to offer o Senior.Scholarship of £50, and four Junior Scholarship of £20, to be competed for at the ensuing Cambridge Local Examinations in December, 1866.

That the Senior Scholarship shall only be given on condition that the scholar spend a year with a practical agriculturist, to be approved by the Education Committee, or at one of the Agricultural Colleges, such as Cirencester, Glasnevin, or the Agricultural Department at Edinburgh, and that the money shall not be paid until a testimonial as to good conduct and industry be produced, at the end of the year of scholarship, from the body or person under whom the scholar has studied.

That the Junior Scholarships shall only be given upon condition that the scholar spend a year at a school to be approved by the Education Committee, and that the money shall not be paid until a testimonial as to good conduct and industry be produced at the end of the year of scholarship from the person under whom the scholar has studied.

HOUSE.—Major-General the Hon. A. N. Hood presented a rough plan of the proposed alterations and additions to the Society's house; but on the motion of Mr. Randell, seconded by Mr. Pain, that the matter be referred back to the House Committee, with power to consult Mr. Fowler or any other architect, and to prepare alternative detailed plans and estimates for the execution of the work before the Council in August, the adjournment of the consideration of the report was carried.

On the motion of Major-General the Hon. A. N. Hood, seconded by Colonel Challoner, the grant of £200 to the Royal Veterinary College for the current year was renewed.

The election of a Member of Council in the room of Mr. Hamond, resigned, was deferred at the suggestion of Mr. Thompson, who moved that a committee be appointed to consider and report to the next Monthly Council whether in their opinion it is desirable that any change should be made in the present mode of filling up vacancies in the Council, and that the existing vacancies shall not be filled up until the report of the committee has been received. The motion was seconded by General Hood, and carried, and the following committee was nominated: Earl of Cathcart, Earl of Powis, Lord Vernon, Lord Walsingham, The Speaker, Major-Gen. the Hon. A. N. Hood, Sir J. Johnstone, Bart., M.P., Mr. Clayden, Mr. Dent, M.P., Mr. Druce, Mr. Holland, M.P., Mr. Randell, Mr. Thompson, Mr. Torr Mr. Owen Wallis, Mr. Jacob Wilson.

On the motion of Mr. Dent, M.P., seconded by Mr. Torr, the loan of the Society's small dynamometer was granted to the Yorkshire Agricultural Society for the trial of mowing machines now going on in that county.

The following extract from a letter of Mr. Haymans Hye, British Vice-Consul at Ghent, dated June 21, was received from her Majesty's Secretary of State for Foreign Affairs, for which the thanks of the Council were accorded: "The new system of treating flax consists in planting elm trees round the ponds or along the ditches in which the flax is retted. When the leaves fall, they are gathered and thrown into the water, where of course they decay, which impregnates the water, and gives the flax a more even colour (as it is called, silvery blue), and renders the fibre softer and silky. When the ponds and ditches become almost dry, they carefully take out the first layer of mud, and place it in heaps on the sides which is again thrown into the water when the retting season returns, and thus repeated every year. As colour and softness increase in value so considerably, and as the method of producing those qualities appears so simple, the information given by Mr. Haymans Hye may perhaps be of much interest."

THE GENERAL MEETING of the members of the Society was held at the Star and Garter, Richmond, on Thursday, Lord Powis, in the absence of Lord Tredegar, the president of the year, in the chair. There was no business to be transacted, the meeting having only been called in order to comply with the terms of the Charter, which requires the members to be convened three times in each year. The secretary, Mr. Hall Dare, explained that it was the usual practice for the annual general meeting to take place in the show-yard; but this summer the Society would hold no cattle show, in consequence of the prevalence of rinderpest. On the motion of the Hon. O. Duncombe, seconded by Mr. Oliphant Ferguson, it was resolved that the thanks of the meeting be conveyed to Lord Tredegar, for his conduct as President during the past year. The proceedings closed with the usual compliment to the chairman for the day.

THE STEAM PLOUGH.

The July meeting of the Cirencester Farmers' Club was held at the Assembly Rooms, King's Head Hotel, on Monday afternoon, 2nd July, when there was a good attendance of members. Mr. E. Bowly presided.

The subject for discussion was "The Steam Plough," and it was introduced by Mr. Edmund Ruck in the following remarks:

Mr. RUCK said: I don't in any way stand before you as a teacher of steam culture; my object is to explain what I have undergone, and to suggest what I think should take place in the future. Steam culture has been tried for many years; but I think if we look back to the last seven it will answer the purpose for which we have met to-day. Commencing with the "direct system" of Mr. Fowler, I may remark that that consists in drawing the plough with a rope to the engine, or with a rope from the engine to the anchor, and from the anchor back to the engine again. Then there is Smith and Howard's plan, which is termed the "roundabout;" and with that system the rope is put round the field, the engine standing in one corner, and as the field is ploughed the plough gets nearer to the engine. There is another system of which we know but little—it is called Halkett's "railway," and was thought something of eight or ten years ago. Mr. Halkett put his engine and machinery upon rails with the intention of cultivating the land between the rails, perhaps at a cost of £20 per acre. But he went further than that. The "coulters" of the plough were made hollow, so that he could take liquid manures down these pipes and deposit them at the bottom of the soil that was stirred. The next system was Mr. Romaine's, or the "rotary." That plan was for the engine to travel over the land with a rotary machine underneath it, digging and stirring, and scratching as it went, till at length the land presented the appearance of innumerable mouse-scratchings, or, as was described by Mr. Wren Hoskyns, was reduced to perfect sawdust. Now, in looking over these four systems, I am bound to say there is none that can touch Fowler's in simplicity and direct work. There is no system so plain, so serviceable, so easily managed, so suitable to farms that I am acquainted with, or to any farms, as that of Mr. Fowler. The Smith or "roundabout" system may do very well on a small scale; but when you come to a large piece of tough clay-land, you want a monster power, and with steam we possess a mighty agency that may be made very effective for good, if properly applied. Let it always be borne in mind that the more steam the more power, and the more power the more work and the more command over the land we occupy. I have now done with the past; and, in speaking of the present, I may remark that the mode of steam culture adopted by myself is to have two 14-horse-power engines, with a rope to coil on the drum by machinery. This system has been looked upon with some doubt by farmers who knew nothing of the rope-coiling process. They thought it would be impossible to get the rope coiled on the drum without considerable wear; but it is now done by machinery in such a beautiful style that even cotton on a reel is not wound truer or better. Then many people objected to using two engines, because they thought that while one was standing still there was a loss; but there really is not the waste that some persons imagine, as one engine is "bottling up" the steam while the other is at work. With this system no horses are required for removing. When work is finished, the implements are attached to the engine, and away they go as fast as a man can walk. The present implements used are a plough, with harrow and presser attached; and, with the plough, you have a broad board, digging breast, and stirring breast. Another implement is the scarifier with harrow attached, the plough taking about three feet and the scarifier six. There should also be at hand a set of heavy harrows that will take twelve feet. There is a great doubt amongst farmers as to the best system of land culture—whether it should be the plough or the scarifier. *Discussion on that point is desirable.* With regard to expenditure, there are three points that will arise after the engine is purchased—viz., coals, water, and manual labour. Now, speaking of the first item, some people are under the impression that in a short time England will be run out of coals, and they speak of economising; but surely a mine of wealth like that ought not to be allowed to remain any longer in the bowels of the earth. I take it that if we had copper, iron, or any other mines, we should not allow the mineral to remain in the earth because we fancied it was coming to an end. My advice is—take up the coals, and turn them into money as quickly as possible, resting assured that by the time they are exhausted we shall have something to take their place and which will put us in a different position from that which we are now in. As to water, there may be some difficulty with regard to it on some farms, but one man and a horse can well supply two 14-horse-power engines with all the water they may require in a day, and coals also. With respect to manual labour, I regard that as a point which we have seriously to consider. Taking into account the great increase in the demand for that kind of labour, the question arises whether in the future we shall have the same amount at our disposal that we formerly had, and here, I think, steam will come to our assistance very greatly. I believe that we shall have as much ploughing done by one man, with the aid of steam, as was done before by three men with horse or ox power. Now, gentlemen, I have no doubt you expect me to say that we, the leaders in steam culture, have had no troubles; but I assure you that those who first started this system of land cultivation have experienced many obstacles. They have had a great deal to undergo; but, fortunately, I think they have arrived at a point when they can console themselves with the reflection that their troubles are overcome. It strikes me very forcibly that the question we have to consider is—What do we cultivate for? What is the object sought to be accomplished? I take it that you want to aërate the soil and subsoil, and make them the storeroom of atmospheric influences. Now I ask you is it the right way to put three or four horses or oxen to plough in a line, when it is known that every time such team crosses the field something like two tons have slid and trampled from one end of the land to the other about every ten inches in width? This must harden the ground; and every practical farmer must acknowledge that this appears a most clumsy and unlikely process for obtaining tilth. The creating of a hardened floor beneath the soil, and above the subsoil, which in a great measure cuts off the connection between the two, is a real injury to fertility, and the destruction of this pan or indurated layer by steam-ploughing is one of the greatest benefits of steam cultivation. The thorough drainage of clay soils is thus accomplished, and the material of the subsoil is added to the scanty supply of shallow soil which has hitherto fed our crops, and an immense increase of fertility is by this means obtained. It is not fair to make a comparison of the cost of one operation by steam-power with a corresponding operation by horse-power, because it will be apparent from the above remarks that steam-culture is so far superior. I was of opinion that you could plough land with oxen free of cost, and that the oxen would generally pay the rent of the land they lived on by their improvement; but I believe now that if you can plough your land free of cost by oxen, I should be right in advising you to take to steam, for the superior manner in which the work is done by steam is sufficient to encourage anyone to make the outlay. It is not my intention to advocate any system that will not bear strict inspection into the balance sheet, for no system is worth mentioning unless it can be proved to be profitable. A tenant cannot be expected to embark in steam-cultivation unless he has a proper holding. There are roads to be made, fences to be put straight, and fields enlarged; and it is not fair to expect a man to go to so great an outlay if he is only a yearly tenant, with a chance of being turned out of his occupation with a six months' notice to quit. The next thing to which I would direct your attention is that by steam-culture you get your land into such a state as to constitute it good land. You get a deep surface-soil, with a porous sub-soil, so that the rain-water will not in any way do it injury, nor the sun burn it up. This is the case with all lands under spade husbandry. Allotment lands under spade husbandry are of more value than lands alongside that are worked by the plough. It is not my intention to trouble the meeting with a long array of figures, but to confine myself to the cost of one day's work. You will be better able to arrive at a practical conclusion as different farms have different soils, different labourers, and different management. With respect to the cost of one day, to plough 10 acres of stiff land you require 1 ton of coals, 16s.; two engine men and ploughman, 10s.; water man, 2s.; oil, 2s.; and horse, 2s.; making a total of 32s. for the day, and for this you will be able to plough any 10 acres of strong land in England. The above estimate is of course exclusive of the cost of the engine and the wear and tear. Respecting the wear and tear, I have come to the conclusion that it is reduced to the lowest possible amount. There is nothing but the rope and one or two small pulleys, of small value, that can wear out. I think, when steam comes to be more generally used, and men are paid for the work done by the acre instead of by the day, it will be a great advantage to both parties. The improvement thus resulting to the labouring man is very considerable. He feels an interest, with his master, in the work of the day; emulation is encouraged, and a desire awakened to rise in the ranks; although, let me add, I have the same engine-man and ploughman now that I had when I first adopted steam, seven years ago. Then, there was a great prejudice against steam-ploughing among the labourers; but that is now quite overcome, and the fact is, my people at the present time take as much interest in the success of the system as I do myself. To continue the results of my own experience, I may remark that the steam-horse never tires, and it may be found advisable to employ two sets of men. If you were behind with your work in any way, I hardly dare say what amount of labour you would be able to do in a week with two sets of men. But if you were not behind in your work, and had a steam engine, the question would arise, whether you would let to hire? I think, with the present mode of having two engines, the moving being so easy and the wear-and-tear so slight, that you will find the system of letting to hire generally adopted. Then, as to drainage, the land under steam culture drains very much better. I have a piece of land which had been drained fourteen years, yet it lay quite wet under horse and ox culture; but since it has been cultivated by steam not a drop of water is to be seen on the surface, although no alteration has been made in the under-drains. I can quote Mr. William Slatter, of Stratton, as having experienced the same thing in a field in his occupation. All land will be greatly improved by steam ploughing; but I wish particularly to draw your attention to its use on light land. It is on the light land of England that there will be the quickest returns, as by one operation you entirely change the nature of the soil. By breaking the pan and stirring the subsoil, you prevent burning and drying up. The opinion I am about to express may be received by many present with considerable doubt; but I believe Messrs. Slatter and Porter have proved that Fowler's steam plough is the cheapest stone-digger, and that steam ploughing has become quite practicable on the Cotswold Hills. I perfectly recollect saying, some time ago, that I expected in a few years to see steam ploughing on the steepest stone declivities of the Cotswold Hills; and I believe that time has now arrived. One great advantage of steam culture is that when a day's work is finished there is no baiting, no harness to take off. The labourer makes the most of his time; he has not to walk in the morning first to the stable and then to the field, but he goes direct from his house to the field, and he returns direct to his home as soon as the work is done. The land works better, and you can get at it quicker after rain when steam-ploughed than when horse-ploughed; and if, as is stated, the rainfall here is 26 inches, it will seldom do any damage to land so managed, We are told by scientific men that no less than 3 cwt. of guano falls annually on every acre of land, and if we can keep the ground in such a state as to retain that valuable fertilizer, we shall have done much towards improving agriculture. Garden allotments seldom require draining, in consequence of their superior spade cultivation. Superphosphates will act much better on strong land after being cultivated by steam than after horse-power, owing to the finer tilth that is produced; but superphosphates on strong land left in a rough state will do no good, yet they will accomplish wonders after the soil has been worked to a fine surface. There is no better criterion of the capability of land to grow a crop than the size of the worms. If you have large worms you will have large crops, and if small worms small crops. Respecting the turnover system, it must be borne in mind that the plough, from its wedge-like form, will turn over a greater amount of soil with less power than any other implement that has yet been brought out. The pace of the plough is of very great importance, but I would strongly recommend you not to plough too deeply or suddenly at first. Nearly all the land in England can be successfully cultivated by steam. If it is in ridges it should be ploughed lengthways, and not levelled too quickly. Farmers who are inclined to embark in steam culture should take care to procure sufficient power. There is the same cost of manual labour with a small as with a large set, and the latter always gives you a chance of being well up with your work. My experience with steam has been considerable, and I assure you there is less risk with a steam-engine than with horses. Drilling can be done in the same direction as the land is ploughed, and I have seen one-third more wheat grown in the same field when it was drilled the same way as it was ploughed than when it was drilled across the furrow. Drilling, horse-hoeing, mowing, reaping, horse-raking, and carting can all be done better after the steam plough than after the horse plough, because there is no furrow. You lose no sheep on their backs in the furrow, and steam-ploughed land is much dryer and more healthy for them. Digging by steam is equal to digging by manual labour, because the subsoil is not pressed. With corn at a low price, if the English farmer is to maintain his position he must resort to the use of steam, as foreigners will be sure to do so. As I before stated, travelling with the engine is extremely simple, and I would as soon trust my man with it as with a one-horse cart. I also repeat that, in my opinion, there is no system of steam culture equal to the direct system of Fowler. I have seen a great many tried, and that is the conclusion I have come to. I am no partizan, and would not advocate any system that I did not believe to be the best, the most economical, and the most serviceable. I am aware that many farmers would have used steam before, but they have been puzzled to know whose system to decide upon. Some have said: "This is a very high-priced engine; I should like one at about £250 instead of £1,000;" but I believe that if you are to have your work done properly and well you must have one of Fowler's double set of engines of 14-horse power. You could do as much work with Fowler's set while Smith is fixing his tackle as Smith could do all day. In conclusion, I have a word or two to say of the late Mr. Fowler, who was personally known to many of you. I believe there never was a gentleman in England of higher character than Mr. Fowler. He possessed a spirit that I have never seen surpassed, if ever equalled. When he made up his mind to embark in the undertaking to make steam cultivate land he used an amount of energy that is seldom met with; and that, combined with the capital he employed, gave evidence of a fixed determination on his part never to be beaten. I believe his name will be handed down to posterity as the only steam inventor worthy of mention.

Mr. JOHN ARCHER stated with regard to drilling the same way as the plough went that he had noticed it for 40 years, and where that system was adopted it took one-fourth less seed to the acre than where the land was drilled across the furrows. It was an old-fashioned way; their forefathers used to do it, and in matters agricultural they were not the biggest fools in the world. In his parish, 30 years ago, they never knew of such a thing as drilling across the furrow. The crops came up more readily when they drilled with the plough.

The CHAIRMAN remarked that circumstances had not rendered the employment of steam necessary in his case, and he was sorry he was not able to give them much information on the subject. It was a great satisfaction to him to find that his old friend, whom he should never forget, was so well supported and spoken of there. Though he had gone, his works lived behind him. He was glad to see present a gentleman (Mr. Greig) who was very closely connected with the late Mr. Fowler, and he would be able to give them much valuable information on the subject then under consideration. With regard to drilling with the plough, if that was the better system, it struck him as being rather singular that they did not adopt it.

Mr. ARCHER said there could be no doubt that it was the better plan. Where it was pursued, the wheat came up earlier and with greater regularity.

The CHAIRMAN: Then had we not better alter our system? We always drill across the furrow.

Mr. GRIEG said there were a few points suggested by Mr. Ruck's remarks to which he would briefly refer. In the first place, when Mr. Ruck was speaking of the advantages of steam culture, the question naturally presented itself to every thinking mind, If the benefits are so great, why is steam so seldom to be seen in this neighbourhood? He came from London that morning, and along the whole line of railway he did not see one steam plough. How was this? It must be because a prophet had no honour in his own country. They started steam-ploughing in this neighbourhood first, in the Swindon district; but the number of breakages to the machinery caused no end of expense, and the energy and the patience of the people were entirely exhausted by these accidents, expenses, and delays. Now, farming was a business that would not stand delays. What they wanted in farming was that the land should be cultivated at a given time, and the operations done to the hour. In his opinion, the breakages and mishaps that occurred on the first introduction of steam-ploughing in this district were the sole cause of the tardiness that had been manifested in the further adoption of that system of land-cultivation. They all knew that when a man was disappointed in any cause, it took twice as much to convince him afterwards as it did at first. As an illustration of that, he might remark that formerly they sold twenty steam ploughs in Wiltshire to one in Lincolnshire; the case was now reversed, and they sold twenty in Lincolnshire to one in Wiltshire. He had at the present time at least twenty or thirty inquiries for machines to go into Lincolnshire, where the land was easier of cultivation than in Wiltshire; thus proving that there was nothing wrong in the machinery, but that the delay evinced in the adoption of steam in this locality was attributable to the disappointments and prejudices occasioned by the great number of breakages in former times. Mr. Ruck's experience was simply this—he had pulled through, and was convinced that he was right. His (the speaker's) impression was, that by adopting steam cultivation they would have command of 40-horse power at any moment. When that power was standing in the "stable" it was not costing them a shilling, and it would enable them to get everything done in proper season and time. If the success of a crop depended on the operations being performed in time, was it not well that every farmer should have command of proper force? Then the expense of labour was a point that was worthy of consideration. Last week Mr. Ruckhad had a 60-acre field to plough, and in five days at least 55 acres of it were done, only four persons being employed in the operations altogether. They as mechanics went about for labour and could not get it, and he was quite certain that before three years had passed they would have labour twice the value that it was now. If such was the case it was absolutely necessary that they should begin to think about steam-ploughing, if the labourer was not to beat them. It was of very great importance after harvest that the land should be exposed to the atmosphere at once, and it was impossible to do this well and expeditiously without the agency of steam. Another point to be considered was this: When soil was cultivated by horse-power two or three other operations were necessary which were not required with steam, as the machine passed over the ground leaving it, not trodden, but in a properly pulverized state, rendering rollers and clod-crushers unnecessary. Speaking of the difficulties that formerly stood in the way of an adoption of Fowler's system, Mr. Greig remarked that they were now all but entirely removed. The transporting of their engines used to be difficult, and they also experienced an obstacle with regard to the education of the agricultural labourer. This was a point he had watched from the commencement ten years ago. He recollected when he came to Wiltshire first he had an engine which had cost him 20,000 miles of travelling, and when he got there and went to speak to the men they could talk of nothing but beer. After going there, however, about two years, he must say that the men entered properly into the spirit of the thing, and they spoke of nothing but their master's crops. With tespect to Howard's roundabout system, he would say nothing more of it than that it was easily applied, and was a great deal better than horse-power. The speaker in conclusion thanked Mr. Ruck for his kind mention of the late Mr. Fowler, with whom he was connected from the commencement of steam-ploughing.

Mr. THOMAS PORTER observed that they had experienced no difficulty with their tackle, and he instanced a case where his machine had to work on a piece of land shaped like an orange cut in two, and it was expected by some persons that the engines would find their way into the river, but they went and did the field without any difficulty. They had done 300 acres in two months. Mr. Ruck referred to the cost of oxen when at work, but he did not say what they cost when standing still. Respecting another remark made by that gentleman, he might say that they paid everything by the acre, and their men received so much per mile when travelling on the road.

Mr. EDMONDS, after remarking on the utility of the drag, stated that the management of land after it had been left by the steam-plough was a matter that required attention, and should be carefully considered by all who commenced steam operations. They might use the steam-plough judiciously, but it was possible, by neglecting the after-management of the land, to fail to secure a good crop. Last year he ploughed a piece of land in autumn, scarified or dug it, and then in spring dragged it with a steam drag, and he had really a capital crop of turnips. A year or two before that he pursued a different course, ploughing in spring and cultivating after that, and the crop was not so satisfactory. He had no hesitation in saying that both wheat and root-crops on heavy land were improved by steam operations; but then came the question—they had a great many moderate-sized farms of 300, 400, or 500 acres, and on what sized farm could a steam-plough be used with profit to the occupier? It was quite certain that a man with 400 acres of arable land could not use two 14-horse power engines, and the question for them to consider was—what sized engine ought they to have on farms of small acreage, and on what sized holdings could steam-ploughing be commenced with advantage? He did not much approve of hiring out, as, if there were several persons in treaty for the same engine, it would be impossible for all to get it at the proper time, and serious delay might be the consequence. If they had an 8-horse-power engine on a moderate-sized farm, it could do their thrashing and other steam work, and it might thus be used well and profitably.

Mr. BENNETT urged farmers not to purchase very cheap coals for their engines. He once obtained some of inferior quality, and was unable to get but very little steam from them.

Mr. GRIEG said the after-management of land was a most important subject, and it had not yet been dealt with. He had a question under consideration, and providing the land was entirely cultivated by steam he could deal with it, but not if horses had trampled over it, as the plan he proposed was adaptable only to land which had been steam-cultivated. Speaking of letting to hire, Mr. Grieg remarked that he was "fortunately" connected with the Gloucester Steam Company, which cost him many a night's sleep. It was a very unfortunate affair, but if it had been properly managed it might have succeeded. With regard to the item of coals, he was of opinion that, if they got horses off their land entirely, they would before long get to a point when 1 cwt. of coals would do as much as 6 cwt. did now. He believed that an engine costing £1000 would be found to answer on a farm of 400 acres; and with regard to small holdings he thought that a contract might be entered into by a number of small farmers, who should take care to bind themselves to get the machine at a certain time.

The CHAIRMAN said he was one of the unfortunate shareholders in the grand Gloncester Company, and he was informed that the cause of its failure was, waiting upon small farmers.

Mr. GRIEG remarked that he went to Gloucester before the company was formed, and he advised the promoters to have two engines. But they had only one, which was unfitted for the character of work it had to perform; and through that the company booked their failure.

Mr. RUCK made a few observations in reply, remarking that whatever he had hitherto expended in adopting steam as a land cultivator, he did not repent it, and there was no chance of his relinquishing the system. When land had been three or four years under steam cultivation, the expense and risk were greatly reduced, because the culture was so much more easy and effectual. He endorsed Mr. Grieg's remark that ploughing by steam would cost nothing, in consequence of the great increase of crops which it ensured.

In reply to a question, Mr. RUCK said he paid his engine-men 20s. a-week when engaged with the machine; and when they were not using steam, they worked on the farm, and were paid the same as the other labourers.

In answer to a further interrogation,

Mr. RUCK repeated his belief that land under steam cultivation would be sufficiently improved to pay the cost of the ploughing.

The CHAIRMAN said no one could doubt the importance of this question; and he was glad that the Royal Agricultural Society of England proposed to spend a thousand pounds in fully investigating the subject, by sending commissioners to visit the working of steam ploughs in different parts of the country.

A vote of thanks having been accorded to Mr. Ruck for his paper, the meeting separated.

LANDLORD'S CAPITAL.

Land adapted for agricultural purposes is a saleable commodity, whose market value is regulated by supply and demand, and also by intrinsic values, according to its improvement or deterioration. In this respect, it is subject to the laws of commerce, like all similar articles in the market. Owners of estates may entail them, to prevent their being sold and alienated from their posterity; but this is only a statutory commercial provision, so that "those who make laws can mend them," or annul them altogether, thus throwing the entailed estates again into the market, to be sold and brought at the pleasure of the vendor and purchaser. The tenure of land may be freehold, copyhold, or leasehold; but these are only so many conditions to which land as a commercial commodity is subject; and although they greatly affect the investment of capital, it is more as a matter of working detail than principle. Again, there is a difference of tenure in England, Scotland, and Ireland; whilst almost every county and district has its own peculiar "customs;" and although these latter have reference chiefly to the investment of tenants' capital, they nevertheless affect also, more or less, the landlords' investment. And lastly, all lands may be mortgaged to pay-off debts, legacies, and so forth; so that when a landowner enters into possession of the estate of his ancestors, his capital for a time is virtually in the keeping of his creditors. He may or may not have the power to sell and pay-off the burdens upon the estate; but, as a practical quesion, such is of no material consideration, if the more honourable and advisable course is to retain possession of the whole, then paying-off the debts by instalments, according to the dying wishes of the testator, the economical management of the property, and the future interest of the family.

It is to the agricultural view of the subject, rather than the political and commercial, which we purpose confining our observations at the present time. A landowner, for example, is not a mere capitalist, as some political economists have in their ratiocinations fallaciously assumed him to be, but an agriculturist by profession. In an uncultivated state, the natural produce of the land may be worth something; but this view of the question has long since ceased to have a practical meaning in the British Isles, for every step a landowner advances in the race of time brings home to his experience the well-attested truths that "land has its duties as well as its rights," and that he, as a landowner, must of necessity make himself master of his profession, and go with the times in the march of improvement. The day is gone by when a landlord can depute or assign to his tenants the performance of his own professional duties with advantage; for such is now the progress of things that he must either perform them himself or abide by the consequences, which means, in plain English, sell his land to somebody qualified to discharge the proprietary duties belonging to and due by the [illegible]. Some political economists have even gone so far as to lay down the rule in their doctrine that every farm should be a separate estate, cultivated by its own landowner, on the plea that the tenant system is contrary to sound economy. This narrow-minded and erroneous view of the subject evidently arises from a misconception of the facts of case, or from viewing the owner of land as a mere capitalist, and from making no distinction, or an improper distinction, between the working capital of the tenant invested in procuring from the land its animal and vegetable produce, and the working capital of the landlord invested in reclaiming the land and placing it in a condition ready for the investment of the tenant's capital, and the keeping of the land in this tenantable condition.

A long experience has proved that the landlord and tenant system of this country makes a good going plough, when each keeps up his own end of the yoke. The soundness of this will readily be appreciated by all who are practically versant with the details of agriculture and capable of drawing a trustworthy conclusion from the facts of the case. To argue as some do that a small proprietor who owns and farms his own land is stimulated by a higher degree of confidence in the investment of capital in the permanent improvement of his land, and in the maintaining of it at a higher degree of fertility, is tantamount to playing at "blind man's buff;" for it is drawing general conclusions from exceptionary practices, or, rather, from premises which never existed, and in all probability which never will exist in this country; for in ninety-nine cases out of every hundred of these exceptionary cases landlords are anything but profitable farmers to themselves, and the few who, contrary to this rule, can show a favourable balance-sheet are wholly indebted to the tenant system for their practical men, who grow the corn and cattle, and thus make the money for them. In point of fact, properly speaking, a landlord system means a peasant proprietary, who each holds his own plough, and does all the manual labour upon his estate, with the assistance of his family—a system which will not bear a moment's close investigation at the bar of practice; for before his family is grown up, a small proprietor has either too much work upon his own hands, more than he can perform properly, or else if he himself is able to do the work of his farm, he must then have idle good-for-nothing sons and daughters when they grow up to manhood and womanhood. A small estate planted here and there, as it were, amongst large ones, the latter being managed on the landlord, tenant, and labourer system, with an abundance of labour to hire, when it is needed by the small proprietors at the outset, and plenty of employment when their families grow up, is manifestly no practical rule from which satisfactory and reliable conclusions can be deduced. In short, the day-dreams of those political economists who thus advocate the breaking-up of large estates into small holdings, each occupied and cultivated by its owner, are incompatible with the science and practice of capital invested in agriculture by the landowners and tenants of this country, and the growing necessity experienced by both for a still larger amount of working capital being invested in the application of modern discoveries in science to the productive resources of the land by each party in their own respective subdivisions of professional employment—the former each in putting his farms into the most profitable crop-bearing and tenantable state, and the latter each in keeping his farm in the highest order, so as to procure from it the greatest possible amount of produce of the best quality it is capable of yielding.

"Estates," says Loudon in his *Encylopædia of Agriculture*, "are of good and bad character." Those with a good character soon find good tenants to farms when they fall into their owners' hands; while those with a bad character are in a very opposite position—one whose details invariably tell their own sad tale.

The force of the argument thus expressed in the preceding paragraph is beginning to make itself practically heard in every province of the kingdom. In other words, landowners are beginning to find to their cost that capital invested in land is not a permanent investment, but a redeemable investment. The rental of an estate, for example, is redeeming interest on the capital invested, and not a permanent annuity; for a portion of the rental is required to keep up the property to its working value. It is common to call houses, roads, fences, drainage, and the like, permanent improvements; but it is a well authenticated fact that such is not the case, as large repairs and not unfrequent renewals are required, involving an outlay of capital, which in the course of time runs up to the original purchase-price of the land, or its current value in the market. If, for example, the fee simple costs £30 per acre, the whole or greater part of this may represent the original cost of reclaiming the land, drainage, houses, fences, roads, and even manure, so as to put it into a tenantable crop-bearing state. Now, although some of these improvements may partake of a somewhat permanent nature when superficially viewed; and although some grass and meadow lands are looked upon as naturally rich and fertile, yet it is also a well-authenticated fact in practice that not one of these is permanent. It clearly follows, therefore, that what the landowner receives for his £30 per acre is a property in land that is subject to tear and wear; hence the outlay in repairs, and in renewals when repairs become impracticable.

When repairs and renewals are fairly taken into account, the actual or permanent interest which a landowner receives for his capital is very small, even upon the best-managed estates. Tenants may, in their leases, be bound to do the repairs; but the economy of this old rule is annually becoming more and more questionable, for repairs by tenants are always executed in conformity to the duration of their leases, and hence, towards their expiry, are less or more superficially done, which, practically speaking, means not unfrequently worse than no repairs at all, as they prematurely hasten the necessity of renewals by the landlord. Some things may, no doubt, be economically performed by the tenant, such as keeping the roads upon the farm in repair, and the annual cleaning of the ditches or open drains, where such are required; but even these repairs, if done by the tenant, involve the supervision of the landlord, and hence the outlay of less or more redeeming capital. In other words, a well-managed estate requires the services of a regular staff of officials, whose annual expense amounts to no inconsiderable item in the redemption of the fee-simple, so as to keep up the property to its value.

It is not unusual for purchasers of land to estimate the rent as so much interest on their capital permanently invested, after deducting the expense for repairs and renewals; but this we aver, for several reasons, is far from a scientific or correct mode of expression, while it is apt to engender erroneous notions relative to the relation between landlord and tenant, and the responsibility of both parties to the public. The Irish tenant-right question may be quoted as an example of this latter kind in reference to erroneous notions about the tenure and improvement of land, and the bounden duties of landlords and tenants, professionally, to the country—erroneous notions which, in all likelihood, will continue to distract the sister-country so long as her landowners and tenants are guided by the opinionative extremes of the past, relative to the nature and economy of their respective professional duties and investments of capital in Irish agriculture—landowners occupying the one extreme, and their tenants the other. So long as landlords on the one hand, for example, look upon the purchase-money as a permanent investment, on the ground that their estates will realize the purchase-money in the market; and so long as they bind their tenants to do the repairs and renewals at reduced rents for redeeming periods of time; and so long as they preach up the old philosophy, once familiar in the ears of English and Scotch tenants, of getting tenants of skill and capital to do all the professional work of agriculture (landlords' work as well tenants' work) for landlords' interest only, and often less; and so long as game-preserving, political, theatrical, and court extravagances form the order of the day with them; and so long as tenants, on the other hand, are necessitated by the force of competition for farms to comply as much as possible with landlords' terms; and so long as they dream that the money and labour which they spend for their landlords is a permanent investment, simply because at the expiry of their leases incoming tenants would be found who would give them full value on their original outlay for this investment; and so long as they erroneously conclude that shortsighted and antiquated craft of this kind either keeps down rent, or secures a permanency of occupation—just so long will the relation of landlord and tenant in Ireland remain an unsettled question, distracting her provinces, and retarding the progress of Irish agriculture, and the establishment of manufacturing and commercial industry.

So long as the market value of land continues to rise, from its limited supply and increasing demand, landowners may be safe, in a pecuniary sense, to play at their old-fashioned "do, nothing game;" but the more intelligent of their body begin to see, and even feel, that it is a losing game—one which is annually becoming more and more precarious to rely upon for remunerating interest on capital, as farmers make practical progress in their professional branch of agriculture—in manures, machinery, corn, and cattle. In other words, there is a maximum market value of land for agricultural purposes, to which landowners and their estates are fast approacning; and when they get this length in the march of improvement, the old aristocratic do-nothing bubble will explode, when the force of circumstances will compel them either to invest their own redeeming and renewing capitals, or else take their farms into their own hands, and thus invest both the landlord's and tenant's capital—a result which few or none are prepared to encounter, practically speaking, either in a pecuniary or professional sense.

The economy of things special and general is fast convincing all considerate landowners that the direct method o performing their own professional duties as to repairs and renewals is the more profitable plan both for themselves an their tenants. Houses, fences, and drains require not only t be repaired, but in a very short time to be renewed; an work of this kind imperatively demands, from an economica point of view, peculiar professional talents, which few practical farmers possess; and the few who have such talent have not time to use them.

Tenant's capital we cannot discuss in this paper; but th increase of working capital now required in live and dea stock, and the increase of skill and labour, together with th increase of interest to which he is entitled for capital thus invested, is fast placing the duties and investment of the landlord beyond his sphere of action.

The proper investment of landlord's capital in keeping u the tenantable and even crop-bearing value of farms require a higher degree of professional skill than is generally credited; but, if properly and economically invested, it will return fair interest—repairs in the form of greater durability, and renewals in an increase of their productive values to tenan. Tenants can safely close with mutual agreements of this kind; but fair interest to the landlord will not remunerate the tenant. In short, terms that will remunerate tenants involve heavy sacrifice on both sides—of rent on the part of the landlord, and of time, produce, and money on the part of th tenant. Many landowners are even paying off tenant customs, such as tillages, due to outgoing tenants at the expiry of their leases, so as to afford them more working capital, in cases where they continue possession, and to make the entr more easy to the incoming tenant, when the old one dies o or removes; and to the sound economy of such a course single objection cannot be raised on either the landlord's o tenant's side of the question. No doubt many exceptions wil be pleaded, such as the want of skill and capital on the par of the landlord; but where there is the will and skill, capita will be forthcoming at command, so that, practically expressed the exceptionary plea means that the tradespeople and labourers employed take the advantage of the landlord—a lin of argument which plainly bespeaks its own exposure; for, in both branches of agriculture, an apprentice-fee must be pai before either landlord or tenant can farm with profit.

JUSTITIA.

THE BIRMINGHAM HORSE-SHOW.

Had there been no horse-show at Islington there would have been none at Birmingham. The one is a close copy of the other, even to the engagement of Mrs. Beverley, and the amusing bit of flunkeyism of making men judges because they happen to be lords. Unfortunately, however, the capabilities of Bingley Hall are anything but equal to the larger area of the Agricultural Hall, and, as mapped out during the past week, never was a sight seen under greater difficulties. Unless you fought your way close up to the side of the narrow awkward ring, there was nothing for it but a reserved seat, although the public were emphatically cautioned by the officials that these said seats were intended chiefly for ladies, most probably their own wives and daughters, with room, of course, for their noble selves. Indeed, matters were carried with such a very high hand by these authorities, that exhibitors began to put pertinent questions as to the fitness of Birmingham citizens for the duties they so complacently undertook, as to revert to the old and still unsolved enigma of how much or how little share the agriculturists themselves have in the conduct of the agricultural exhibition annually held on the same premises? To keep, though, as closely as possible to our present text, the mistakes were so many, the arrangements so bad, and the utter ignorance of such a business so palpable, that if the Birmingham Horse Show is to go on, the example of the Smithfield Club should be followed and Bingley Hall let out for the week to a committee o society of gentlemen, who have some knowledge of wha they are about, and who can consequently command th confidence of horse-breeders and sportsmen. It is tru that Mr. Horley, Mr. Osborn, and Mr. Lort were i commission on Tuesday; but it was quite as clear tha the actual direction did not rest with these gentleme but centred rather in others who should themselves b the first to admit how small were their qualifications fo the appointments to which out of their own mouths the had been gazetted.

The proceedings were so nicely adjusted, that three se of judges were put to work at once, and these gentleme so admirably disposed that if you only watched the business of the ring you could know nothing whatever of a that was going on in the adjoining lane. Such an understanding was indeed very emphatically impressed by notice, we will say given as offensively as possibly, that i you left your seat you lost it, although we gravely question whether any law or custom would sanction so arbitrar and inconvenient a regulation. Breaking somewhat beyond the bounds of its metropolitan model, the Birmingham list included classes of cart-horses, which were scattered here and there, two or three together, just as an od corner could be found to put them in, and where but few the visitors cared to follow them. Not that the spec- r suffered much from his negligence, as the heavy ght horses were very indifferently represented, and thoroughly out of place as to continually suggest aptness of the equivocal welcome which went rather your room than your company. About the best entry his section was the pair of dray-horses exhibited by Midland Railway Company, and one of which was a icularly fine animal, but they were both overdone with , and looked as if they had not done a day's work twelvemonth. The seventeen cart-stallions num- far more middling than meritorious horses; but Mr. ing's black, with plenty of substance, is a good r, though seemingly very light of bone below the . However, it is a clean flat leg, free of much of superfluous hair in which the Shire horses so gene- rejoice, and the lack of which should be put as a in the Champion's favour. About the next best to alongside of was Young England's Glory, standing teen hands three inches high; but he has lost his , and the second prize went to a good young roan, ll with luck be better still. The third was an of no style, while Mr. Griffiths sent one, and Mr. Yarall, a couple of as indifferent beasts of bur- were allowed to travel a country; and Mr. a Yorkshire coach-horse, called Stonewall Mr. Brierley's pair of plough-horses were of ly and active "habits," as Mr. Graham's were mart pair, with the mare, a wonderfully clever one, ring a better partner to have reached higher on . The cart-mares and foals were a very bad lot, Charles Isham's first just a useful animal and no- more; but Mr. Bennett's three-year-old is a great y filly, famously done by, that would turn into ready any day and anywhere. There was nothing very ble amongst the two-year-olds, and the introduc- of the agricultural element to so cramped a show- as Bingley Hall was indisputably a mistake. Even y-horses never "took" at Islington.

hunting classes were far better filled, and in plain were almost too much for the judges, as we never three men with apparently less knowledge of their than Lord Coventry, Mr. Cook, and Mr. Fel- . The hesitating, see-saw way in which they went one horse to another without manner or method, the slowness, not to say timidity, with which they to a verdict was more than provoking, and one had lly to leave them for half-an-hour or so only to them very much "as you were" on our return. tely they had the Islington awards to go by, and ygear, Master of Arts, Ingleby, and Rural Dean gain amongst the more prominent of the prize- ; and deservedly so too, as there is no doubt but that nters in London were very ably "appraised." ur and Ingleby, indeed, both showed better than fore, having been judiciously reduced in the in- , as it was quite a treat to see so handy a horse as y take Mrs. Beverley over the hurdles, about her pleasantest ride in a very hard and hot day's work. r of Arts, on the contrary, does not improve upon stance, and Rural Dean, is as we have previously of him, more after the fashion of a showy charger a horse to get over a country. Mr. Sargeant's a deal more like a workman, if nowhere in the class, gh he fairly won the cup as the best hunter the ty of a Warwickshire farmer. The judges, r, held very tenaciously to a middling old of Mr. Alkin's, and Lord Coventry and Mr. s in turn got on his back. But his Lordship is much of a horseman, and though Mr. Fellowes is to be a capital performer with hounds, low shoes, , and baggy trowsers scarcely tend to exhibit a rider round the ring to the best advantage. Cobnut, another of the firsts at Islington, again refused to jump; but Mr. Battam's black flew his fences beautifully, and being moreover a very good-looking horse, it is strange that he missed a commendation at the least. There were a few more good weight-carrying nags; but the sweetest horse of the show was in the open class, "without conditions as to weight," and where Mr. Jones, the veterinary surgeon from Hereford, won with a chesnut that Mr. Percival, of Wandsford, would have at any price, though 200 guineas secured him. Up to a certain weight, this is one of the most complete and stylish horses we have met with for many a long day; but, then, Mr. Jones has generally a good one or two in his stables, and we remember his sweeping the decks a year or two since, when showing on his own ground. The three-year-olds and two-year-olds for hunting purposes were also led off by entries over which there could be no mistake, Mr. Holmes' black brown, out of an Augur mare, being really a grand horse; and Mr. John B. Booth's chesnut, by The Drake, for depth, limbs, power, and fashion, even better, as to say that The Bird of Passage is a worthy successor to Beechwood does by no means justice to the merits of the young one. The three-year-old class was very handsomely filled with a quick Irish horse of Mr. Harrison's for second, and three or four more well-bred ones, such as Mr. Butt's and Mr. Harvey Bayley's to pick out from the field. The hunting mares and foals were another capital class; but the particulars in the catalogue must have had a deal to do with the adjustment of the awards, as the condition "adapted for breeding hunters" appeared to be overlooked; and after a debate almost as long as that over the Reform Bill, they took to a couple of bloodlike mares for first and second, balanced by a coarser sort for third, with one of just the right stamp by way of commendation. We should have preferred seeing this class out earlier in the day; but, going by the book, the business commenced with the thorough-bred stallions, a very moderate lot of just a dozen in all. From these, they put up the steeplechaser Penarth as first, although the Lord only knows why! as there was nothing to show for it over a very plain, common sort of animal, just out of training. The handsome Idler, with his showy action, was more deservedly second, and old Neville third; while a promising three-year-old by Oxford, a hunting horse of Mr. Drage's by Sprig of Shillelagh, and the awkward Clapham were in the next degree. It is said that Clapham has beaten Penarth about home; but nobody could ever pass the chesnut's action save on the supposition that he is ricked in his back, and if either has ever been a prize horse previously, there must have been a funny field against him. But the placing of the thorough-bred sires was really "done hansum" in comparison with the awards over the stallions *for getting cobs or ponies*, where another set of judges gravely gave the first prize to a coach-horse standing nearly sixteen hands high, and this moreover with two as clever cobs as a man need wish for, in the class. If you wanted style and action, you had it in Lord Brownlow's Lucifer, late Captain Barlow's Morning Star; or should more strength and substance be the object, it was as ready at hand in Mr. Griffith's Ancient Briton, both, we repeat, model cobs, and yet the first prize went as we have stated. A more absurd award, or one in more open defiance of the conditions, we do not hesitate to say was never announced, and the judges might just as well have given the premium for such a purpose to Mr. Manning's other entry, the black cart-horse, Champion. These same gentlemen got on better amongst the riding-horses in work, where Mr. Percy's old Crafty had it once more all her own way, and scored her thirtieth, fortieth, or fiftieth win. A once familiar name in the prize-list, that of Jonas Webb, comes again to the fore with a useful weight-carrying hack, and Mr. Milward holds his own amongst the ponies, being highly commended for action in one place, and winning outright with a Bobby in another. A reference, however, to the standard led to numerous disqualifications, and one of the Thurgarton entries, passed as winner a week or two back in Yorkshire, was now put out of it, as was Mr. Beevor, much to his astonishment and proportionate annoyance, while others received their rejection with more resignation. The two pony proper classes were excellent, and as they stood in the poultry department, where there was something like light and ventilation, the chief enjoyment of the show was centred here; that is, if the visitor could tear himself away from the jumping, which was made quite as much of a burlesque as the same business at Islington, and that is a bold word too! Neither of the two pairs of carriage-horses was worthy of a premium, though both were duly awarded; but the ladies' horses included some of the gems of the show, and Major Quentin's chesnut is one of the best broken horse for such a purpose that ever was exhibited, if rather above the standard we should put a lady's horse at. Still, he shows a deal of breeding in his looks as well as conduct; while his owner, if we remember aright, has already been distinguished in our colums for his giant wheat, his sample of oats, and so forth. The second here, Mr. Holyoake's grey, to stand alongside is almost a model for such a class, so neat and so bloodlike, as at four years old with plenty of time to settle down to his trade. There were three or four more nearly as good, at some of which we managed to just get a glance or so; but we must repeat that any such inspection was made only under difficulties, there being a repellant almost offensive front offered by the officials, that deterred a man with anything like feeling of self-respect from asking for, or insisting upon those facilities being afforded that we are happy to say are generally proffered with so good a grace by gentlemen who are equal to the offices they themselves undertake. The thing here is in the wrong hands and the wrong place; as it is clear enough that if a Midland Counties Horse Show is to go on, the country gentlemen and farmers must be in a majority and not a minority, and that the exhibition must be removed from so hot, close, and inconvenient a building to the more healthy and enjoyable open. When one calls to mind a horse show in Yorkshire, and then thinks of one's trials elsewhere, *horresco referens.*

PRIZE LIST.

HUNTERS.

Judges: J. R. Cookes, Woodhampton, Stourport.
Lord Coventry, Croome Court, Worcester.
R. Fellowes, Bitteswell, Lutterworth.

Thorough-bred Stallions for getting Weight-carrying Hunters.—First prize, £30, W. S. Cartwright, Newport, Monmouth (Penarth); second, £15, T. J. Merrick, Northampton (Idler); third, £5, W. Gulliver, Swalcliffe, Banbury (Neville).

Hunters, equal to 15st., Four Years old and upwards.—First prize, £15, T. Sutton, Alwent, Darlington (Voyageur); second, £10, T. Gee, Dewhurst Lodge, Wadhurst, Sussex (Master of Arts); third, £5, H. J. Percy, Howsenrigg, Aspatria, Cumberland (Ingleby). Commended: R. Alkin, Hartshill, Atherstone (Harkaway); and G. Van Wart, Edgbaston (Drayton).

Hunters, without condition as to Weight, Four Years old and upwards.—First prize, £15, F. B. Jones, Hereford (ch. g. by Rangoon); second, £10, H. S. Lucy, Charlecote Park, Warwick (Rural Dean); third, £5, P. Hobson, Leamington.

Extra Prize of 5gs. for the best hunter in the two preceding classes, the property of a Warwickshire farmer.—D. Sarjeant, Long Itchington, Rugby (Argus).

Three-year-old Colts or Fillies for Hunting purposes.—First prize, £15, G. Holmes, Newbegin, Beverley (Tom); second, £10, A. Harrison, Metchley, Birmingham; third, £5, E. Wadlow, Vatton, Much Wenlock. Disqualified as being entire: W. Robinson, Benehill Cottage, Tamworth (Napoleon).

Two-year-old Colts or Fillies for Hunting purposes.—First prize, £15, J. B. Booth, Killerby, Catterick (Bird of Passage); second ,£10, W. D. Manning, Rothersthorpe, Northampton; third, £5, T. Easterson, The Red House, Bawdsey, Woodbridge (Young Zuyder Zee). Commended: T. Butt, Pirton Farm, Kempsey, Worcester.

Mares with Foal at Foot adapted for breeding Hunters.—First prize, £15, W. Leach, Gorse Hall, Stalybridge (Jessy); second, £10, E. Phillips, Bushbury Hill, Wolverhampton (Lady Langford); third, £5, J. Tite, jun., Liveridge Hill, Henley-in-Arden. Commended: E. Weston, jun., Over Whitacre Hall, Coleshill.

CARRIAGE HORSES.

Judges: P. Kench, Milverton, Leamington.
J. Payne, Market-Harborough.
J. Walker, Holywell, Halifax.

Pairs of Carriage Horses.—First prize, £20, T. Avery, Church-road, Edgbaston (Monarch and Rollo); second, £10, Capt. J. Simpson Ballard, The Verlands, Cowbridge (Chanticleer and Grimalkin).

HACKS, ROADSTERS, AND COBS.

Hacks and Roadsters not exceeding 15 Hands 2 Inches high.—First prize, £15, H. J. Percy, Howsenrigg (Crafty); second, £5, J. Gilman, jun., Lancaster-street, Birmingham (Jenny Jones). Highly commended: R. Milward, Thurgarton Priory, Southwell (British Queen); A. Harrison, Metchley; J. Gilman, jun. (Salop); and J. Holland, Dantzie-street, Manchester (Fiddy).

Weight-carrying Hacks from 14 to 15½ Hands high.—First prize, £15, J. Webb, Melton Ross, Ulceby, Lincolnshire (Brunette); second, £5, H. Ashton, Polefield, Prestwich, Manchester (Barmaid). Very highly commended for action: R. Milward, Thurgarton (Crisis). Highly commended: R. W. Johnson, Bricklehampton Hall, Pershore (Turk). Disqualified as above height: R. Norman and Son, High Close, Aspatria, Cumberland (Billy Barlow).

Cobs under 14 Hands high.—First prize £10, Captain J. Simpson Ballard, The Verlands (Sturdy); second £5, R. Norman and Sons (Jack). Highly commended: Mrs. H. Chavasse, Hamstead, Birmingham (Lalla Rookh), and W. Lort, The Cotteridge, King's Norton, Birmingham. Disqualified as above height: R. Milward, Thurgarton (Dunstan).

LADIES' HORSES.

Ladies' Hacks of any Height.—First prize £15, Major Quentin, Woodleigh, Cheltenham (Knight Templar); second £5, G. Holyoake, Neachley, Shiffnal. Highly commended: R. J. L. Price, Rhiwlas, Bala, Merioneth (Firefly), and Haines and Parker, Birmingham (Corsair).

PONIES.

Ponies under 13 Hands high.—First prize £10, R. Milward, Thurgarton, (Lunette); second £5, E. Ludlow, Nechells Park Road, Birmingham (Ranger). Highly commended: T. Worthington, Derby (Pilgrim), J. Cooke, Oakham, Rutland, and J. Hennessy, West Street, Bristol. Disqualified as above height: Rev. W. H. Beever, Pencraig Court, Ross, Herefordshire (Alice Hawthorn), and J. Scott, King's Arms Lane, Carlisle (Donald).

Children's Ponies under 12½ Hands high.—First prize £5, F. Matthews, Unett Street, Birmingham (Piebald); second £3, W. E. Wedge, Queen Street, Wolverhampton (Fanny); third £2, C. Collins, Oakfield Place, Selly Oak, Birmingham (Tommy). Highly commended: T. B. Thomson, High Street, Birmingham (Little Ebony).

Stallions for Getting Cobs or Ponies.—First prize £10, J. Manning, Orlingbury, Wellingborough (British Statesman); second £6, Earl Brownlow, Ellesmere, Salop (Lucifer); third £4, D. Griffiths, Aubrey Arms, Bonvilstone, Cardiff (The Ancient Briton). Commended: J. W. Ladkin, Lutterworth (Regulator).

DRAY HORSES.

JUDGES.—R. Doig, Lillingstone Hall, Bucks.
R. J. Newton, Campfield, Woodstock.
R. Swale, Saredon, Wolverhampton.

VETERINARY REFEREE.—E. Stanley, V.S., Broad Street, Birmingham.

PAIRS OF DRAY HORSES, FOUR YEARS OLD AND UPWARDS.—First prize £20, the Midland Railway Company, Birmingham; second £10, R. Evans, Duddeston Mill, Birmingham.

AGRICULTURAL HORSES.

STALLIONS.—First prize £30, J. Manning, Orlingbury (Champion); second £15, W. Wynn, Grafton, Alcester (Sensation); third £5, Yeomans Brothers, Pennymore Hay, Wolverhampton (Black Sea). Highly commended: T. Greenwood, Calverley Bridge, Rodley, Leeds (Young England's Glory).

PAIRS OF HORSES FOUR YEARS OLD AND UPWARDS.—First prize £20, C. W. Brierley, Rhodes House, Middleton, Manchester (Dick and Sharper); second £10, G. Graham, Yardley, Birmingham; third £5, W. H. Bull, Weobley, Herefordshire (Duke and Duchess).

MARES WITH FOAL AT FOOT.—First prize £15, Sir C. Isham, Bart., Lamport Hall, Northampton (Flower); second £10, S. Davis, Wollershill, Pershore (Darby); third £5, R. Madeley, Combe Fields, Coventry (Darling).

THREE-YEAR-OLD COLTS OR FILLIES.—First prize £15, J. E. Bassett, Husbands Bosworth Grange, Rugby (Blossom); second £5, W. Wynn, Grafton (Matchless).

TWO-YEAR-OLD COLTS OR FILLIES.—First prize £15, E. Lythall, Radford Hall, Leamington; second £5, R. Marples, Aston-on-Trent, Derby. Commended: F. Nash, Brancote, Stafford (Princess).

TO THE EDITOR OF THE MARK-LANE EXPRESS.

SIR,—On my arrival here last night, I found that I had had the first prize awarded to me in the under 13-hand pony class over 29 competitors; but that, after wearing the blue-ribbon for two hours, my mare was measured a second time on those uneven boards, and disqualified. Mr. Milward, who succeeds to the prize, was disqualified, I hear, himself in another class, and then took exception to my pony. He, a practised judge himself, would never have met with that fate unless there was an element of uncertainty in the measuring. I hold that the measurement of the judges' V.S. is wrong. A horse should be measured by a perpendicular line, let fall upon a level floor, from the *point through which a straight line drawn centrally up the shoulder-blade from the shoulder point emerges*. The central line of the shoulder-blade indicates, as all know, the obliquity of the horse's shoulder. The plan adopted here is to measure from the corner of the shoulder-blade next the horse's neck. That is wrong, and measuring on shrunken boards is wrong. As I am informed by the secretary that all appeal is useless, I am anyhow determined to see if some rule cannot be laid down by which on future occasions we exhibitors may be spared the mortification of forfeiting a fairly-won and highly-honourable prize, but of being subjected to the discredit of having attempted a cheat.

Yours, &c.,
Birmingham, July 11. W. HOLT BEEVER.

FIGURES FOR FARMERS.

BY HOWARD REED.

It is not a little strange that we should have been dependent, so late as 1855, on a foreigner for the most correct statistics of the cattle produce—the produce of beef, mutton, pork, veal, and milk—of this country. Porter and M'Culloch had previously presented us with estimates, which were very much disputed. Lavergne seems to have been the first to give us anything upon which we appeared to rely.

Some despotic caliph or other—the adjective, however, might be omitted, since all caliphs are supposed to be despotic—with a profound contempt for statistics, remarked, "Should I govern the better for knowing how many tiles there are on the roofs of the houses?" "Even so, caliph," it might have been replied; "for with this information thou wouldst have been just so much the more knowing. We never know when our knowledge will be required of us, nor how it will be turned to account. In a high wind, for instance, the information might be useful."

I am far from disputing that dishonest and vexatious uses are made of figures; but, at the same time, one cannot close one's eyes to the benefits that have accrued to us by the establishment of a society whose members are pledged to register the facts concerning the social life of the people of this country, and honestly to reduce them, as far as can be, to figures. The statesman, the philosopher, the man of commerce, and the tradesman are all interested in obtaining such data as they can rely upon. It is only thus that we can compare the past and the present, for the purpose of determining whether any, and what, way has been made. It is thus only that the statesman can discover the effect of any definite line of policy: it is only by such barometric observations that those engaged in commerce and trade can regulate their operations with economy to themselves and the country. Were it not for the registration of data obtained by the Registrar-General, the mortality-bills would show as high a death-rate now as that which characterised this country thirty years ago; and now, although we might suspect it, we could not prove that this tendency of population to concentrate in large manufacturing foci is a serious charge to us, in human life. We are now pointed to the fact that in cities like Manchester and Liverpool men and women die off sooner than they do in London, and that the rate of mortality is twice as severe as it is in the rural districts. Apprised of such a fact, of course we begin to look about us for the cause and the remedy. Were we not certain of the fact, we should scarcely trouble ourselves with such investigations. The same remark applies to many other branches of statistical inquiry.

I have long urged in the columns of this magazine the necessity which exists for correct statistics as to the area of land under the principal crops grown in these islands. The produce of Ireland is already so tabulated, and with the best results. We are gradually inclining to the same practice. The present year has given us a very valuable document, by which we see the number of live stock in each division of the United Kingdom, and the number of each kind of live stock in each county. From this return we are able to test the accuracy of former computations, especially those of M. Lavergne, which are founded on Spackman's, McCulloch's, and Porter's figures, corrected by his own observations. In 1855 he assumes for us the following possessions in cattle:—

Live Stock.	England and Wales.	Scotland.	Ireland.
Cattle	5,000,000	1,000,000	2,000,000
Sheep	30,000,000	4,000,000	2,000,000

The proportion of cows in this total of 8,000,000 head of stock was 3,000,000.

The area was then estimated at 77,894,488 acres, of which twelve or fourteen millions of acres were supposed to be in permanent pasture. It is clear that the stock covered the area of the United Kingdom in the proportion of 10.40 head per 100 acres; or, in other words, that England grazed one head of stock (cow, steer, calf) to every 7½ acres, Scotland one to every 20 acres, Ireland one to every 10 acres.

At the same time the same authority computed France to possess 10,000,000 head of horned stock (comprising 4,000,000 cows) dispersed over an area of 182,000,000 acres, in the proportion of 8.83 head per 100 acres.

The following tables show other computations made at various dates, as compared with the official returns of 1866:—

Live Stock.	Eng. and Wales. 1854.	Scotland. 1857.	Ireland. 1865.
Horses	1,309,010	185,409	547,867
Cattle	3,422,165	974,437	3,493,414
Sheep	18,691,088	5,683,168	3,688,742
Pigs	2,633,724	146,354	1,299,893

The return of 1866 give the following official figures under the same heads:—

Cattle	3,886,053	937,411	3,493,414
Sheep	16,850,887	5,255,077	3,688,742
Pigs	2,280,700	219,716	1,299,893

In comparing the area and the cattle in each country of England, I find some facts that deserve to be kept in mind by all whose voices are apt to be raised and listened to in agricultural assemblies.

In the first place, it appears that the 32,590,397 acres which are measured on the surface of England proper support some 10.14 head per 100 acres, having lost by the cattle plague 4.14 between July 1865 and April 21, 1866. There are 46.34 sheep in like manner to each 100 acres.

In Wales, the area is 4,734,486 acres, and the heads respectively of cattle and sheep upon each 100 acres are 11.56 and 35.45.

In Scotland, the area being 19,639,377, there are found to be 4.92 head of stock, and 26.24 sheep on each 100 acres.

The table below has been prepared at some pains, to give a comparative view of the number of cattle and sheep possessed by each of the English counties to each 100 acres. It is a pity that we are not able to show the distribution of cattle and sheep over the grass land; but we have as yet no return of grass land as distinguished from arable. The first column of this table shows the counties in their order of precedence, as respects the number of cattle to each 100 acres. The second eliminates the cows from the first column, and shows their proportion as to the area separately. The next shows the loss sustained by each county from the cattle plague. The fourth exhibits the per-centage of sheep to each county. The fifth is added to explain the third, by classifying the sheep counties in four groups of ten counties each, according to their order of precedence.

The counties marked in italics stand pre-eminent—*Leicester*, for cattle; *Derby*, for cows; *Chester*, for loss by cattle plague; *Rutland*, for sheep. Rutland, it may be observed, is in the first group both as respects cattle and sheep, and seems to have been but a slight loser by the plague. Somerset is similarly situated. Those counties which are in the fourth group for sheep, it will be seen, stand for the most part in the first group for cattle.

It will be observed that the cows are most numerous in the first group of ten counties; and were we to take the steers of two years old, the yearlings, and calves, we should find very nearly the same distribution that we do in the case of the cows. It may also be remarked that the plague, while it visited Chester, which stands in the first group for cows, was comparatively little felt by the others, but made great havoc upon counties far less numerously supplied with cows, and I may add with cattle.

COUNTY.	Cattle to 100 acres.	Proportion of cows to each 100 acres.	Per-centage of losses of cattle from cattle-plague, computed upon estimated ordinary stock.	Sheep to each 100 acres.	Order of precedence.
Leicester	17.31	5.70	.37	56.50	II.
Derby	17.16	8.85	.90	26.76	IV.
Somerset	16.53	8.04	.10	60.82	I.
Lancaster	16.61	8.76	1.87	17.84	IV.
Cornwall	15.31	4.43	.69	34.34	IV.
Stafford	14.72	8.25	3.26	31.70	IV.
Chester	13.15	8.08	34.28	13.70	IV.
Salop	12.97	5.18	4.89	39.05	III.
Nottingham	12.75	3.78	3.37	46.67	II.
Rutland	12.41	2.70	.16	79.07	I.
Hereford	12.18	3.70	.83	48.08	II.
Gloucester	12.02	4.31	.12	44.26	III.
Warwick	11.92	4.65	.88	52.46	II.
Northampton	11.93	2.91	3.24	11.78	IV.
Westmoreland	11.38	4.32	—	46.27	III.
Devon	11.19	4.53	.09	46.41	III.
Buckingham	11.10	5.02	3.52	56.38	II.
Dorset	11.07	6.70	.02	77.95	I.
Cumberland	10.90	3.82	4.78	39.55	III.
Monmouth	9.98	3.65	—	35.60	III.
York	9.73	3.68	6.30	38.76	III.
Wilts	9.69	5.17	.43	69.68	I.
Worcester	9.69	4.40	.43	43.23	III.
Lincoln	9.53	2.19	5.66	61.29	I.
Oxford	8·90	3.06	5.90	70.50	I.
Bedford	8.73	2.63	1.70	60.97	I.
Durham	8.40	2.67	.77	23.56	IV.
Sussex	7.96	2.78	1.40	51.66	II.
Huntingdom	7.69	1.87	11.30	51.32	II.
Berks	6.76	2.90	1.62	72.57	I.
Norfolk	6.81	1.81	5.81	44.05	III.
Northumberland	6.27	1.43	1.16	50.86	II.
Cambridge	6.04	1.74	17.90	48.56	II.
Suffolk	5.87	1.86	3.52	43.03	III.
Surrey (extra metropolitan)	5.82	2.12	5.04	32.27	IV.
Hertford (extra metropo.)	5.81	2.02	2.29	58.14	I.
Kent (extra metropolitan)	5.21	1.87	2.66	72.74	I.
Essex (extra metropolitan)	5.01	1.46	3.66	36.96	III.
Hants	4.55	2.42	.61	57.89	II.

The publication of a table like this cannot be withou its advantage. The great dependence of the farmers o this country must be henceforth in the production of mea milk, and butter. Each district must bestir itself, and d its utmost. Let the remainder ask themselves why th standard of Rutland, Leicester, Somerset, Hereford Gloucester, Warwick, Dorset, Buckingham, and Wilt may not be reached? Now that we are lessening the risk of infection, it will be well that this question shoul receive more attention.

THE CULTIVATION OF OATS.

Oats are grown more widely perhaps than any other grain crop; and on good soil, with fair cultivation, produce good, remunerative crops. It (the oat) has fewer enemies than most of the cereals, and may be raised with less labour than any of them—in fact, so easily are oats raised, that very great negligence prevails in almost all parts of the country where they are grown, in properly preparing and enriching the land. It would seem that a crop which is so universally grown as to exceed the wheat crop of the country by over a million of bushels, according to the census statistics of 1860, would receive better attention; but a notion prevails that the oat has strong assimilative powers, and it is best to use it to extract the little remaining fertility of an almost exhausted soil—at least such might be inferred from the course of culture pursued too often.

Soils and their Preparation.—Oats thrive the best on a rather moist soil, of a somewhat closer, heavier texture than required for the best crops of corn. The ground should be ploughed as soon after the frost is out as it will admit of working well; plough deep and with a narrow furrow-slice; no matter if a small quantity of subsoil is brought up, as the oat will bear it better than most other crops. The frosts of winter have the effect to loosen the soil, and leave it in a favourable condition, so that teams, fresh and strong, will better perform their part in deepening the soil than at any other season of the year. The judicious farmer should ever keep in mind that it is better to add to his farm by deepening the soil than in adding to the acreage. I should have said before that oats should follow some hoed crop, properly.

Varieties.—Every section has, or is supposed to have, its favourite variety, which has some fancied or real quality better than any other, and that variety is generally cultivated to the exclusion of others. It would therefore be vain to recommend or say that any particular variety was best; but all agree, I believe, that the heavier the grain weighs the better, as a general rule. Oats, long grown on the same soil, unless particular pains are taken in selecting and saving seed, are liable to deteriorate in quality, and an advantage is often derived in obtaining seed from cooler localities.

Selecting Seed.—A great failing, too common among farmers and cultivators generally, is the want of care in selecting and saving seed for future use. In selecting oats, the heaviest, brightest, and plumpest only should be used. Take the best to be had, and assort them in one of the following ways: By throwing them across a long floor, retaining only those which go the farthest; the lightest will fall short. By running them through a fanning mill, turned rapidly, to blow over the lightest; the heaviest and best will run down, and those only should be used: to procure seed at first, this is the best way; but when a crop is grown, the better way is to take from the best part of the field that wanted for seed. Take the bundles and whip them across the head of a barrel, and select therefrom such as will readily shell out, and divide still farther as before. In this way the standard weight may be kept up indefinitely, and an improvement oftentimes made on the original. Were farmers to use similar care in selecting seed of all kinds, there would be less complaint of the products being of poor quality as well as quantity.

Sowing.—The seed should be sown as soon after ploughing as practicable. Drilling-in seed, sowing broadcast, harrowing in and ploughing in, are the different ways practised in different sections and by different cultivators. For several reasons, I give the preference to drilling-in the seed, for by so doing the quantity per acre can be more exactly regulated; the covering is more uniform than by the other methods; the seed is more uniformly distributed than in hand-sowing. Being covered uniformly, it comes up simultaneously, and it does not present the spotted appearance which is otherwise often seen. There is also less liability to lodge than in hand-sown, even when sown on similar soil side by side. It will usually pay to let the land lie long enough to dry sufficiently, and roll it to break down any clods, and fit a good seed-bed; then drill in the seed—the depth to be governed by the soil—from one to two inches, and finish off with the roll. In sowing broadcast, the seed is put on immediately after ploughing, and harrowed twice over, length and crossways of the field, followed by the roll to finish off—an important item to help to keep down the weeds and facilitate in harvesting the crop. Ground liable to have standing water should be underdrained, or, at least, water furrows should be opened after sowing, to conduct the water off; for no kind of grain is expected to thrive where water is allowed to stand upon it, if we except rice. Different cultivators use from two to four bushels of seed per acre. As a general rule, the better and heavier the soil, the more seed it will bear; a safe average amount would be three bushels. The earliest sown produces the best crop, both as to yield and weight; the latest the next, and between the poorest.

Harvesting.—Oats, unlike wheat and rye, are better and heavier for not being cut too green, although the straw is less valuable for fodder; being cut green, they pack closer, do not cure so well, and are liable to injure in the mow or stack. The best way of cutting is with the grain cradle, which leaves them spread thin in the swathe, and gives an opportunity to dry so as to be gathered, bound, and put in the stack or mow, without danger or injury, as is too apt to be the case when cut with the reaping machine, and thrown off in "gavels." In the former case, if wet they soon dry out, often without turning; but in the latter they require to be spread. The straw of the oat will retain wet with much greater tenacity than that of any other grain. The grain is bound in suitable-sized bundles, and set on the butts to sun and dry a few hours, and then either carted to the barn or shocked in the field, where they may remain in perfect safety for some weeks. Lay three or four sheaves in the centre, so that the heads will not come in contact with the ground, which is easily done by weaving them together; build around these in a circle, keeping the heads of the bundles higher than the butts, and in the centre; keep the sides perpendicular to the desired height; then draw in evenly, and finish off with a cap sheaf, set and bound on firmly.

Thrashing.—The old modes of thrashing with the flail, and tramping out with horses, have given way to the improved machine driven by horse or other power. An important part is cleaning the grain, as a nice, clean article will always command a ready sale, and a better price, than an equally good article mixed with dirt, chaff, &c. The grain run through the fan-mill twice—first with a coarse meshed riddle, and again through a finer—will usually expedite the cleaning and do it more satisfactorily.

Rotation.—Oats are generally esteemed an exhaustive crop; but when they occupy a place in a regular course of rotation, they are no more exhaustive than other straw and grain crops; but when grown, as is sometimes the case, many years in succession on the same ground with only one ploughing, and without fertilisers of any kind, the land is often exhausted of its fertility, and the soil is filled with Canada thistles, dock, and other noxious weeds, thus rendering it unproductive. There is no better grain with which to sow grass seed for stocking down than oats, and for that purpose I would grow them, seldom if ever growing them oftener on the same ground. Oats are benefited by most of the usual fertilizers, except such as contain much nitrogenous matter or lime, they retarding the ripening, or producing a rank growth of straw, causing it to lodge. The preferable way is to enrich the soil through previous crops, getting it into good heart and tilth, not applying any stimulant to the growth of the plant. A cool, moist season usually gives us the heaviest and most prolific crops.—Wm. H. White, in *The Country Gentleman* (American paper).

POTATOES.—The value of the potatoes imported into the United Kingdom in 1854 was £17,467; in 1855, £10,196; in 1856, £19,222; in 1857, £175,094; in 1858, £337,821; in 1859, £101,038; in 1860, £136,576; in 1861, £112,374; in 1862, £338,842; in 1863, £241,129; in 1864, £142,986; and in 1865, £161,907.

TEXTLESS NOTES.

BY A CROTCHETY FARMER.

Somewhere about two years ago—long before a thought of the cruel *pest*, which is now committing such ravages amongst our herds, had entered the minds of men as a possibility—I ventured to write for the pages of this journal, which I love to make the vehicle of my crotchety thoughts, some remarks which I know by not a few of its readers were thought crotchety enough, but which, if they were honoured by a second perusal now, would not, I am crotchety enough to believe, be considered crotchety in any sense of the term. These remarks were upon the subject of the cruelty which was then practised upon our cattle during their transit from place to place on our railways. Am I right or am I wrong in supposing that this cruelty has no longer an existence? I for one am *not* so sure that it is a thing of the past. Although I mainly, in the remarks I gave at the time above alluded to, took up what may be called the ethics of the question, I did not hesitate to speak, or rather to write, plainly upon what might be the result of such cruelty upon the healthy condition of our stock. Of course I indulged then in no vaticination as to the breaking out of *the* pest which is now so appalling in its course amongst us; but indeed it required no prophetic powers to be able to trace at any time the result in a *general* way of the habitually exercised carelessness and cruelties in which our railway transit companies indulged towards the unfortunate animals consigned to their—I was going to say care—most shameful neglect. I do not think it is by any means a complimentary consideration for our railway managers to ponder over, that the reform of a system which I then denounced "as perfectly and inexcusably disgraceful and characterised by abomination," has been partially brought about by considerations other than the right ones, and that, by a pressure from without which no right-thinking body of men would ever have required, they have inaugurated, or are now apparently beginning to inaugurate, a mode of treatment of stock committed to their charge more in accordance with the principles of humanity, which every Englishman claims to be guided by, and less in accordance with a sickening savagery which, I do not hesitate to say, characterised their proceedings for a long series of painful years. I do not know—I was going to say I do not care, but I do care, and much, very much—what the ultimate result of this outward pressure will be; but much I fear that when it is relaxed, when we get over, shall I say, our cowardly fears, that a return to the atrocious system of neglect and cruelty which I denounced two years ago will be the case in many instances. The question then comes to be—and now is the time to put it and argue the matter fairly out—shall these things be again? Is it true, or is it not, that if the farming community rose up in their might, and demanded, or rather insisted, that these things shall no longer be, that this demand or insistance would be listened to and acted upon? Or is it the truth that the farming community have *no* might; or if they have it, that they are too indifferent, too careless, to exercise it, even when that exercise would be so beneficial to their own interests and to those of humanity? Truly, amongst a by no means limited portion of the community, it seems to be a settled conviction that farmers are nobodies. That they have grievances may now and then be admitted, which should perhaps be remedied; but which, having not the spirit or the power to have remedied themselves, need not therefore be taken at all into national account. That this is by no means an exaggerated view of what estimation the farmers are held in, by a large portion of the community, and the low notion also of their political or social power, it is easy enough to prove. It may be proved, indeed, any day by going amongst, or reading the organs of the trading and commercial parts of the kingdom, and, indeed, need not be sought for in any wide part of the social system; for in the narrowest circles some will be found who glibly enough "settle the hash!" (pretty phrase) of the farmers very soon, and show them up very easily as a portion of the community which no one will concern himself about, as likely to have any weight whatever in the social and political scale. Other bodies may and do get their grievances remedied, or at least get a respectful degree of attention paid to them, if not remedied, which, at the least, is more pleasant than the rough and rude way in which the complaints of the farmers are met. As for getting their grievances remedied, *that* is altogether out of the question; and indeed so thoroughly is the popular mind indoctrinated with the truth as they call it, belief as I name it, that farmers are always grumbling, that therefore, because they are so, that they have nothing real to grumble at—the fable of the boy and the wolf over again, in fact. Until the farming community please itself to rise up in its might of right (for I am crotchety enough to believe that, as they have the right, so have they the might), and show that their interests are in reality those of the nation, and that in their being neglected a national wrong is being perpetrated, we shall go, year after year, the same weary round, circle fashion, ever returning into itself—continual motion, but no progress. All this is very rambling and crotchety, no doubt; but, I take it, it has some meaning, though, I confess frankly enough, I may not have been able to make it clear to the reader. But when from Chancellors of the Exchequer to editors of Manchester-school papers, the veriest children's dogmas ar promulgated—in defiance, too, of the darling politica economy which they think so much of—I do conceive tha it is about (if not *quite*) time for the farming community to rise up, and say what they think of all this fin talk, and of the continued exercise of indifference to thei interests, which an influential part of the communit have displayed for so long a time, and markedly—ver markedly—since the outbreak of the pest, the ravages o which have brought destruction and ruin to many a homestead in the pleasant vales and dells of our country.

And, by the way, writing of this ruin reminds me o the very easy way in which it is looked at and writte about by the organs of bodies other than farmers. "I *would be monstrously absurd*," says a well-known exponent of modern political economy, so-called—"it woul be monstrously absurd" (I have a strange desire to repea the "monstrous" words)—"*for the nation to be calle upon to do anything to assist the farmers.*" If these ar not the very words, they are nearly so, and quite th meaning of those which were given. Of course, the edito of the paper in which this was printed had an entire oblivio of the fact that the nation *was* once called upon to help th cotton people in their distress; but, then, if he had remembered such a very trifling thing as this, he would at onc have seen that it was a "monstrously" "proper" theory to do, because it was the cotton people who had been helped, and of course in a degree it was proper, and, shall I say, politic also for the Government to do so—for, bless you! the operatives and their masters must be kept quiet at all hazards or no hazard, as the case may be. But I do the Editor a wrong in keeping back his reason—probably I am very unreasonable in calling it a reason at all—for showing that it would be a "monstrously absurd" thing for the nation to be called upon to aid the farmers in the ruin which has laid many, and threatens to lay more, low: it is this—and I pray you, good reader, note it well—"*until* the farmers do something to help themselves." It is indeed a fine sample of a "political-economy reasoning" which asks a ruined man to help himself; and it puts us in mind of the "robbing Peter to pay Paul" style of things; only it happens that in many cases in point both Peter and Paul have nothing to be robbed of. But the fine feeling of the reason above stated is beautifully manifested in remembrance of what was done by the community at large, as associated individuals, not as the nation with a national purse. The people not connected, not even in the remotest degree, with the manufacturing districts, did *not* wait "until" the manufacturers helped themselves, or even wait to see whether they would try to help themselves, but large and magnificently liberal sums were thrown into the coffers of the committees as soon as the distress was known. We know at least one large manufacturing town where the manufacturers *did not* begin to help themselves first; but the help first came from those by no means connected with cotton. But the whole matter is scarcely worth arguing upon its merits, or rather demerits; it is only the outcome of a too wide-spread indifference to agricultural interests, as *if*—as *if* these were not just as truly the interests of the nation at large as those of the cotton, the wool, the silk, or any other part of the trading or commercial communities. And are we, or are we not, bound in the bonds of a common interest? It would seem to be not so, if we are to believe certain organs of the press, which boast themselves to be the only representatives of our enlarged humanity.

And yet, after all, is it true, as the writer we have quoted seems to infer, that the farmers have not helped themselves? although I for the nonce take no notice of the queer humanity that prompts a man to stand quietly by, and see another drowning, and refrain from helping him till the drowning man helps himself, perhaps with his hands tied. I say it is not true; and if the writer wrote them in ignorance, he ought not, occupying the position he chose to assume, to have been so in ignorance. I know whether the farmers in many districts have or have not helped themselves. But away with this *finesse* of humanity advocated by the writer I have quoted. The questions, and the only questions are Does distress exist? does ruin stare many in the face? has ruin not met many already? These *are* the questions; and if they are, as they can be, answered in the affirmative, then there is only one answer to them: and I say, crotchety as I may be thought for saying it, it will not be "monstrously absurd"—on the contrary, it will be just and proper—for some national notice to be taken of this national calamity. It is not the calamity of a class: it affects us all; who can say *how* much it has yet to affect us? Times like these are not the times to stir up class feelings, and bring into the field arguments to prove that we should not help our falling and failing brethren. Brothers in birth, we should be brothers in feeling; and if so, even such a pestilence as is now *scourging* us, if it draws us all nearer together, may, although *now* a grievous trial, henceforth be a matter even of congratulation, in that it brought out the better feelings of the community, and made us less and less akin to the brutes, who think, if they think at all, only of themselves, because more and more akin to the true man, who thinks of those other than himself.

It is the happy belief of not a few amongst us that the "world keeps moving," as the phrase is, meaning thereby that in all ways it is getting better, and moving on in the *right* direction. I, for one, can scarcely bring my mind to this belief, and am convinced at times, in view of the misery, deep degradation, vice, and folly which surround us on all sides, that in a few things we are standing still; and probably are blessed only with that kind of movement shadowed forth in the Irishman's instructions to his men to progress backwards; or in the no less absurd instructions which a real John Bull gave to his men, who were hoisting up some goods, to "*elevate* them a little *lower*." I am not sure but that some of our classes are being very rapidly elevated lower, to quote our worthy friend. I have been so completely bewildered by all that has been written of late about the position of the "working class"—I wish some other title could be got for that class, as if they were the only working classes amongst us!—their future, what they are doing, what they are going to do, and what they should do in those good times, which are so often, so very often, sung about (by the way, in some very bad places) as coming, but which are always *to* come. I say I am so bewildered by all the absurdly contradictory things that are said about this class—unfortunate or fortunate, I positively scarcely know which to call or think its members—and said by people who assert that they know all about it, that I am tempted at times to give up all consideration on the subject, and welcome, if I can only attain to it, a condition of perfect oblivion about all concerning it. But then that is impossible to be done—that is, unless I shut myself up as a monk, attend no markets, go to no farmers' club, or read no farmer's and other newspapers; for by no other means is it possible, I conceive, to get out of the way of hearing of, or reading about, what, to borrow a phrase—or rather to paraphrase it—from our United States friends, I propose to call the "inevitable working man." Simply, by way of a change, if not for a higher reason, would it not be possible for awhile to let the working men alone? We have been leading them a good long time in leading strings, treating them as little children, and feeding them, shall I say, upon the "pap" of the silliest advice and the most absurd proposals. We should then see whether in all respects it is true, what many do insist on as being true, that the "inevitable working man" is progressing in the right direction; whether he is all some claim him to be, a perfect paragon of all the virtues, or whether he is not like some of his neighbours, tainted with just a trifle of the sin of the human stock. Probably we would begin to see that he is not all that the fancy of some have painted him; that this progress is backwards, and that some of his elevating processes, so called, are rather lowering in their effects. But then it is so difficult to decide now-a-days what progress is. I have heard people congratulate themselves on what they called the progress some were making, and which I looked upon in my innocence as retrogression of a very decided kind. Some look upon a thing as happy, while I look upon it as the reverse; and truly, as I have said before, it is a most difficult thing for me to arrive at what is likely to be a safe conclusion upon many social questions, if I give myself up to be buffeted to and fro by the winds of diverse doctrines of so-called "organs." I wish they would play some sweet concord "for once and away." For instance, am I to look upon the announcement which I have seen lately made in the agricultural newspapers, and papers not in any sense given to look honestly and kindly at things agricultural—that the farm labourers of certain districts of England and Scotland have joined, or are about to join, themselves into a strong union to raise funds, and then to strike, in order to compel their masters to give them higher wages—I say, am I to look upon this announcement as evidence that "progress" is going a-head amongst the working classes, and that this is an elevating process? As the Yankees say, after crushing in upon you a crowd of questions, I now say "I want to know—pray du tell." I want to know, moreover, which of the two is right of two *M.P.'s*, who ought, I fancy, to know, or if *they* don't, why what chance is there of poor non M.P.'s, like you or I, good Reader, knowing—the one M.P. who counselled, or very nearly counselled, the farm-labourers above alluded to, to strike as the *best* thing they could do; or that other M.P., who felt "a glow of indignation against a system which again and again has wrought such deep, bitter, irreparable anguish, not to the working man alone, but to his wife and little ones"? What, in the name of logic, can we make of this, which calls up in one M.P., as I suppose I may say, a "glow of hope" that good will come out of the strike; in the other M.P. a "glow of indignation at the thought of the misery which a strike can do"? Which is right? I want to know. Or is it one of those things which "no fellah *can* understand?" I want to know a good many more things about this, and perhaps other questions which concern the reader of this journal very closely. I want to know—for I protest most positively that for this occasion, at all events, I shall not venture to give any opinion of my own plainly, as on all other occasions I have done—but in the belief, or upon the supposition—no matter which—that it is not possible, with so many conflicting circumstances, to come to any conclusion: I ask as if I knew nothing, or had no opinion of my own. I want to know therefore whether any good is likely to come out of this union movement amongst the farm labourers? Am I to understand, on the faith of some mouthing M.P.'s—upon my word, when I think of some of these gentry, I am compelled to perpetrate parenthetically a horrid pun, and say that the letters M.P. make me remember what railway-goods' carriers know so well, and knock about so carelessly, namely, "empties," or "empies," as they are sometimes loosely in North Britain called—am I to understand, then, on the faith of some mouthing M.P.'s, or "empies," that it is exceedingly desirable to originate and organise unions, and to promote strikes? or on the contrary, am I henceforth to believe all the dicta and plainly-expressed opinions of a host of men, masters, servants ("empies" and "non-empies") regarding unions for strikes, of which dicta and opinion a few may be expressed as thus: Freedom of individual action in all things lawful to the very birthright of Englishmen—the right to take his labour where he will, and give it at what price he may? Unions strike at the very root of this inestimable privilege—indeed, show that it is no privilege at all. The union compels him to be a marked man—a slave, and nothing else. It tickets him at the price it chooses him to work at; it gauges his ability, or rather makes him to use that ability according to its fancied scale; puts all upon a dead level, and allows no chance of that ability pushing its owner forward. The rules of the union are a make-up of a series of negatives; its members dare not do this, must not do that. "It would fill pages," says one who knew the rules of some unions—"it would fill pages to relate all the things he must *not* do and dares not do, and for doing which he might be punished." Workmen sing in chorus that as "Britons they never will be slaves." The union, if they are in one, allows them to be nothing else. Its members are entered in books, docketed, and numbered; they dare not go from one service to another without notice given to the union; they dare not marry, they dare not move, without notice; and if they fancy that they breathe the breath of free England, and dream that they are free like it, they are mistaken, for a "secret-service" company of the union dodges all their steps, registers all their movements. But the worst has not been said of the curse that many men look upon unions as being. Trade is brisk, work plenty, wages good enough to enable a man, *if* he is prudent and sober—ah! that "if"—to do well and save something for a rainy day. He is desirous to work, happy to work, glad at the prospect of work—when, lo! down comes the order from the council of the union that he is to join the strike. No matter whether right or wrong—no matter whether he does believe it to be wrong—he must go out, or be a marked man—a knob-stick; and it is painful to think what being that involves, in this the boasted land of liberty. But then he is not a free man; "he has no business to consult his own reason, or his own will. Obey he must. He strikes; and, perhaps, after months and months have gone by—when his furniture is at the pawn-shop—when his home is shattered, his energies enfeebled, his spirits sunk, his temper exasperated—when but too probably his wife's health is ruined, and his little ones are grown pale, thin, and mournful—at last the society in its wisdom vouchsafes him leave to return to his work at the very same wages, on the very same terms, that it had forced him to reject." The laws of labour cannot be set aside by any such combinations as unions aim at. These laws are, we have every reason to believe, invariable in their mode of action—at all events, experience has shown as yet that this is the case.

All this, good reader, which I have here stated is not my own opinion—that is, I give it as a *résumé* of the opinion of an immense majority of those who have given their attention to the subject; and I come back to my old question. I want to know if all this is wrong, or is it all just and true? The question is a most momentous one, look at it in any light we may, for those who are contemplating to introduce such a novelty into the practice of farming, as I have at the beginning of my paper alluded to—most momentous; and, if I had any influence with those concerned in the movement (which I have not), I would most strongly urge upon them to consider well the step they are proposing to take. Once taken, it cannot be recalled. I can do no more than use the influence which I have, and that is the influence I am here using—that of the press, a potent engine for good or evil (may it be my lot to move it always for good) and I would put before them only this one consideration—The uniform and invariable result of all strikes which have been inaugurated has been loss, deep, bitter loss, to all concerned.

COLTS RUBBING THEIR TAILS.—Colts sometim rub their tails when in apparent health, and when the most careful examination we can detect neither loo ness, eruptions, nor any unnatural or unhealthy appe ance of the skin whatever. In such cases, and when t colt rubs *only* the tail and the neighbouring parts, we mu look for some other cause for the itching; and in nine ca out of ten it will be found to be caused by the thread or p worm lodged in the rectum, and for *this* Dr. Dadd recommen an injection of salt in solution. This, no doubt, would afo temporary relief. Salt when fed in sufficient quantities domestic animals is believed to be not only a preventive worms, but also of many other diseases—the opinion of so writers to the contrary notwithstanding. My method of fee ing salt in winter is, to make a strong brine, put it on the poore hay, and fodder the cattle and sheep with it twice a wee To horses give the salt clear. I don't like the plan of keepin salt lying by stock, as in that way they sometimes get cloye H. C.—*New Lisbon, N. Y.*

THE PECK OF WHEAT PER ACRE.

ir,—Year by year I become more and more convinced of
immense damage done to the British farmer by an over-
ing of seed. The question is one much less important as
ing of seed than as a preventive of damage to and dimi-
n of the growing crop. I have proved this by a simple
riment; and every farmer can, at small cost, bring to his
mind a proof of the proper quantity of seed to be sown,
ding to his soil, climate, and circumstances.

is is the third year that I have tried the experiment of
a peck on half an acre, in the middle of a field where my
quantity of four pecks is sown. The former results
been recorded, the peck an acre having yielded 7 qrs.
els per acre of fine wheat, and was the best yield on
ld.

experiments have been perfectly fair ones, the wheat
all put in at one time, and under the same circumstances
respect, except quality. The thin-sown was dibbled
kernel in a hole, about 6 inches by 4½. The rest of
was this year drilled with 4½ pecks per acre. The
for three years have been on clover lea, once
ley, and then folded with sheep eating cake, &c.

sown came up with single points, and looked all
and early spring like a bare fallow, especially at a
; on the hill-side, it looked as though the four
had not been sown. So very wet and unfavourable
winter and spring, that we thought, this third year,
-sown could not come to a crop. But slowly and
advanced, and has at length become the best crop on
, undistinguishable from the rest except by its superior
and the largeness of the ears. It will, of course, be
by thrashing. I have no doubt it will, as on former
s, yield more weight of straw as well as more corn than
of the field. I expect it will give about 5 qrs. per
This is not a good yielding year on our stiff, non-
ous soils. It has astonished many who have watched
gress, and made many converts.

-sowers must be content to hear from all who see their
n crops during the early stages of their growth that
ust prove a failure. These three years' experiments
given me perfect confidence in thin-sowing under like
stances; and I shall practise it gradually on a more ex-
scale, as a safe and profitable investment. I think
the proper term for thin-sowing should be "sufficient
"

ll endeavour, by illustration, to show how really un-
able and injurious our general quantity sown must be.
ding to Mr. Caird and general estimates, the quantity of
sown (wheat, oats, barley, &c.) equals one-ninth of the
; so that we get, taking the whole kingdom, nine
for each one sown. An average ear of wheat, barley,
s would have forty kernels: therefore, we only get a
an ear for each kernel.

I will defy anyone who puts into the soil a perfect ker-
grain to produce so little as nine grains, or about the
part of an ear. The probability is, especially in the
wheat, that if a space of three to five inches intervenes
that and the next kernel, the increase will be from 200
instead of nine. Many of mine have produced 600;
it then that we arrive at the present miserable return of
r one? Those who observe Nature's operations will
ceive a reply. By our system of two to four bushels
re the kernels are crowded together, the young fibres are
d forth, and fight with each other for the small available
of soil. The result is many wounds, many deaths, and
of cripples among the few survivors, whose diminutive
ment gives evidence of the severity of the deadly
gle. The crop that came up thick as a grass field soon
es thin and weakly. The reverse of all this takes place
thin-sowing, as the roots ramify and extend without
ing hungry and numerous competitors.

Baron Liebig justly says that the greatest enemy that a
t plant can have is another wheat plant. This alone is a
cient explanation. Many farmers say "We don't like a thin wheat crop;" drawing their conclusions from the cases where the crop had become thin in consequence of overcrowding. So far as my experience goes, the grains are finer in size and quality, the straw more brilliant and glassy, and more free from blight or mildew than the thick-sown. There is more weight of straw per acre.

But see what benefits the young grass or clover plants derive from thin-sowing. They thrive having air and light in the thin-sown, while the thick-sown and poor soft-strawed laid crop smothers and destroys them.

A neighbour of mine who farms well got so angry at losing his clover plant among his oats that he was determined to have a clover crop at the cost of his oats, so he only sowed one bushel instead of four, and to his great surprise (but not to mine) he had the best crop of oats he ever grew, and an ample clover plant besides. Of course, in speaking of thin-sowing, I assume that the drill is used and the seed thus properly deposited.

I use the blower to my seed corn so as to have only heavy perfect seeds—9-10ths of which at least will vegetate.

It is really distressing to be told, as I have been lately, that "We always sow broadcast seven bushels of oats per acre, and four bushels of wheat." Supposing forty animals were placed in a luxuriant pasture, which would keep in good condition 10 animals for three months, at first all would go well, but long before the three months had elapsed there would be plenty of deaths and a few cripples left. So it is with thick sowing.

July 2. J. J. Mechi.

BEES.—This has been a fine season for bees, which are extensively cultivated in Ayrshire and Galloway. In the neighbourhood of moors, particularly, they thrive well, and the heather gives the honey a high and peculiar flavour. The old straw skep is still freely used; but the necessity it involves of suffocating the bees with sulphur to get the honey has led to an increasing use of bee-boxes with compartments to enlarge the accommodation, prevent swarming, and enable the owner to withdraw part of the honey, leaving the bees uninjured. But, of course, this sytem requires a regular bee-house, inside which the boxes are set, with the entrance outside for the bees, and glass windows (with little wooden shutters) on the boxes, by which the progress of the bees can be watched inside the house. The famous Stewarton boxes are very suitable for this system, one being added over the other as the lower ones are filled, a slide opening an aperture to let the bees ascend to the empty box. We believe it was Mr. Highet, Newton, formerly ironmonger, Ayr, who, ingenious in many things, invented a different form of box that suits very well. This is a centre box with two wings. The honey is never taken from the centre box; but as soon as the glass window behind shows it to be full, a slide pulled out lets the bees into one wing, and this filled, the slide in the other wing is opened, and the bees fill it. The honey in the first wing is then removed, and one wing always kept empty. There is a little trouble, as with the Stewarton boxes, in getting away the full box, for the bees do not willingly all leave it. Some experienced hands can sweep out the bees with a feather without being stung, but most bee-masters have a bee-proof dress with glass spectatcles in front of the hood, that completely protects them at all points. Occasionally it has been tried to lay down the full box at some distance from the hive, in the hope that the few bees in it would depart and join those in the hive; but these wonderful insects are not so silly; on the contrary, they summon all the bees from the hive, who in a few hours will carry back all the honey to the main hive. The advantage of these boxes is, that the bees, as long as they have spare room, never swarm. Indeed, we have a well-authenticated instance of a swarm that settled under the slates of a mansion-house in Carrick, and having plenty of room amongst the joisting under the roof, defended their position against all comers for years; and when at last they were smoked out, the honey was actually lowered down in buckets! Some time ago it will be recollected that

Dr. Cumming took to bee culture, and wrote a good deal about it, which experienced English bee-masters pronounced to be as great "bosh" as his prophecies. Indeed, the ways and workings of bees are mysterious enough to baffle the most scientific observers. There is no doubt much nonsense written about them. For instance, the queen is popularly known as a very "swell" individual, very much larger than the common bee, and of brighter and varied colours: this is very poetical, but quite incorrect. The queen-bee is precisely the same colour as her subjects, is scarcely any larger, and can be distinguished from them only by being a little longer in the body. But there is sufficient of the marvellous about the bee-kingdom without necessitating any romance. Take the act of swarming, for instance; the highest flight of science—the electric telegraph—is simplicity itself compared with this extraordinary process. The first swarm from the straw skep usually alights on a bush or branch of a tree. Before swarming, however, some of them collect on the front board of the to the edge of which about twenty or thirty of them the others pass over them and hang on by each other in ters till the ball is often as large as a man's two fists. all is ready and the royal command given, they all come ing out in a stream as thick as a man's wrist, and take through the air. Suppose them to settle on a thorn inches in circumference, their weight, for the cluster is as a boy's head, will bend the thorn stick nearly to the Comparatively few of them have hold of the branch; all hold on by each other. How can those who have bear the weight of the mass? How long would a man on by the branch of a tree if the weight of 300 men denly attached to him? And yet we suspect every bee a hold sustains a much higher proportion of weight cluster below. This is one of many mysteries of that mocks at human science.—*Ayr Advertiser.*

THE ADULTERATION OF SEEDS.

Every farmer is aware of the value of good seed, but few are familiar with the frauds practised by some seedsmen, in order to obtain a dishonourable profit. We shall here confine our remarks on this subject to the seeds—as the various species of turnip, cabbage, and cauliflower—the most easily tampered with; there being other seeds of the same tribe (*Brassica*) much inferior in value, but so similar that it is impossible for a common observer to detect these, or, in fact, to perceive the difference between such and the genuine seed. Thus, rapeseed may be purchased at about half the price of turnip seed, from the grower, and may be mixed without the least fear of detection; charlock also may be obtained still cheaper than rape, and, although smaller than many species of the turnip, may be equally employed in adulteration with impunity. The temptation, therefore, to substitute these for the genuine seed is too strong to be resisted, and the consequence is, that the sale of spurious seeds has become a regular, though *secret*, trade; and we have known wholesale seedsmen who would deliver turnip seed mixed in any proportion required, with from fifty to eighty per cent. of good seed, the price being regulated by the proportion.

But if the mixture were sold without any precaution, it would, in its growth, tell tales, and lead to detection. The dealer in the O.O.O. seed, as it is called in he rade, finds means to destroy its vegetating power, either by hot water, dry heat, or a chemical preparation. All these means have, we believe, been used, but the latter is now the most approved and common method. In any case, however, the seed becomes innoxious because impotent; and, as much more seed is generally sown than is required to produce a crop, unless the seedsman is too covetous the fraud escapes detection, although the farmer may fancy that the plant is "too thin." But there are so many other casualties—the fly, for example—that will destroy the turnip plant in the first stages of its existence, that this circumstance is ascribed to anything rather than adulteration of the seed, and thus the fraud is not suspected.

Mr. Buckland has done good service by the exposure of this nefarious practice in his recent work on "Science and Practice in Farm Cultivation." In order to bring to the proof the fact and the extent of adulteration of turnip-seed (and cabbage-seed is equally liable to it), he instituted a series of experiments upon different samples obtained from seedsmen, the results of which are given at full length in the work. Thus in one case of ten sorts of good turnip, out of a hundred seeds of each sort, an average of 92 came up, the lowest being 84, and highest Sutton's improved Green Globe 98 per These seeds were of the growths of 1859 and 186 which latter year they were sown. But in order to the effect of keeping the seed too long, he sowed som the same in 1862, when the result was very differen the following statement will show.

Name and date of Seed.	Came up in 1860.	Came in 18
1. Mousetail, 1859 .... per cent.	96	[illegible]
2. White Globe, 1859	86	[illegible]
3. Nimble Green Round, 1859	96	94
4. Lincolnshire Red Globe, 1860	90	[illegible]
5. Yellow Tankard, 1859	92	[illegible]
6. Smart's Mousetail, 1860	98	[illegible]
7. Green-topped Stone, 1860	84	[illegible]
8. Sutton's Imperial Green Globe, 1860.	98	[illegible]
9. Green-topped Scotch, 1860	90	[illegible]
10. Early Six-weeks, 1860	90	[illegible]
Average grown	92	[illegible]
Ditto failed	8	[illegible]

Thus, by keeping the seeds two years, they sustain loss averaging 20 per cent., but in one case of 50 an another of 42 per cent. Be it observed, however, there is no charge of adulteration in these samples, experimentor considering them good seeds, and not taining more than a natural proportion of defective although the deficiency in No. 2 was 14 and in 16 per cent. It should also be observed that the see the first year came up at intervals between seven eleven days.

In four other experiments the averages that ca were respectively 68, 77, 70, and 70; the first being nine to fifteen days, the second from ten to seventeen (with one exception), the third from four to e days, and the fourth from four to eight days. four parcels of seeds, of ten kinds each, were " ket samples," and of course the year of their har could not be ascertained. Every precaution was ta preserve the vegetative power of the seeds, and to their growing by keeping the temperature of the the proper range, say between 60 and 70 degrees

The axiom laid down by the Professor is, that well-grown well-preserved seeds should be capable minating to the extent of at least 90 per cent., but seeds in general, and more especially turnip se lly delivered to the farmer, are generally *incapable* of minating to the extent of from 25 to 30 per cent., and quently more even.”

Professor Buckland endeavoured to procure a sample of e 0. 0. 0. seed, or killed seed. But although he could e been supplied with some bushels of it, *as if for sale*, ne could procure a *sample* of it, a suspicion being at e excited that it was wanted for experimenting. A r is inserted in the work, addressed to Messrs. Sutand Sons, of Reading, from some person at Southton, offering an invention for killing the seeds of rape charlock expeditiously and effectually without any ger of detection. Mr. Sutton had the curiosity to call on the fellow, and found it was a genuine affair, but instead of ordering one of the machines, he sent the letter to Professor Buckland, who, on writing to the inventor was promised a machine if the money was sent *first;* but having apparently felt the undesirable nature of paying in advance, he declined the risk.

Mr. Buckland recommends farmers to make trial of all seeds before purchasing, by sowing a given number and noticing how many of them vegetate, and in what time. Above all, he cautions growers to purchase their seeds from men only of character and long standing, or who are known for integrity and uprightness in their dealings.

PROPOSAL FOR A LABOURERS' ASSOCIATION.

—Allow me to call the attention of the readers of your ble journal to the outline of an Association, which, if hed, will greatly promote the interests of farmers and labourers; and to certain considerations to be urged in . Its objects may be stated as follows: To superal custom of hiring at statute fairs, by substituting a system of registration throughout Great Britain, farmer may readily engage agricultural labourers racter of every description; and to secure a better workmen in the United Kingdom. The pleasure accompaniment to the hiring, undoubtedly exercises influence upon those who frequent it; and if there other proof of this, it might be proved by the bad of the men who get it up—showmen and gipsies— the stealers of morality as the plunderers of the hen, who are no friends to farmers, and no friends to civili, morality, or religion. If statute-fair hiring were d, these vagabonds with their questionable entertainwould be in a great measure abolished also. But this consideration aside, it must be most apparent that -fair hiring is a clumsy and unsatisfactory way by to obtain farm servants. It was instituted a long time when scarcely anything better, I suppose, could have adopted; and it should be intolerable in these days of ges, when a better method can be pursued. The obagainst it may be classified thus: 1st. It indirectly the pleasure fair, with its gipsy and show attendants, its unquestionable influence for evil. 2nd. It is far being the best way by which labourers may be engaged. : (1.) There is the time and trouble spent in attending ir, often with failure to secure the labour required. There is no guarantee that the man hired has a good cha. (3.) The number out of which the farmer has to select is confined to a few. (4.) It does not readily dish out for him the comparative worth of candidates for employment, or the best man for his money. This Asproposes to establish register offices throughout Great , to record the name and residence of the farm labourer of a farm situation; his qualification, the place and he wants, &c., upon the production of a satisfactory cter, and upon payment of a small fee to the local re. *A printed tabular statement* containing a list of in want of farm' situations, and all desirable inconcerning them, made up from the local registers, distributed weekly to each member; who is to be such as pays an annual subscription, the amount to be in tion to the size of his farm. *A certificate of qualification*, up from the “character” to be given to each registered by the local registrar; to be renewed every year from ber 1st, from a fresh “character”; to be kept by the while the labourer is in his employment, and to be to forfeiture upon bad conduct. *The character* to be in answer to certain printed questions, to be classified, so accuracy and uniformity may be secured. It must be that the *communication* of the reciprocal wants of and men, respectively, for labour and employment be of the readiest, of the most extensive, and of the ample description. They should both have a method of these wants known to each other as quickly and as ely as possible; because it is evident that the quicker the master, or man, as the case may be, can communicate his wants, and the larger the number of masters or labourers to whom that communication can be made, the more speedily and the more certainly will their wants be satisfied. It must be allowed also, that the more extended the locality, as the less subject to contingencies, upon which the farmer depends for his supply of labourers, the better. In districts where there are excessive demands for labour, owing to mills, &c., the labourer gets, as matters are now, more for his work, but the master does not get in proportion more for his corn; because the local labour-market is governed by local circumstances, while the local corn market is not. This Association would obviate this disadvantage, because to the farmers in these districts it will make known where labourers can be had at a cheaper rate; and will secure a channel of speedy and extensive communication to convey labour wants. It is evident that some inducements must be offered to men to register, to show them good conduct is appreciated, and to increase the number of *good* farm-workmen. These inducements to be presented to all agricultural labourers who can get the Association's certificates of good character, which can be obtained for this purpose by those not in want of employment, and who will be considered as registered farm labourers. 1. Prizes for good conduct. 2. Prizes for skilful labour, as for ploughing, shepherding, &c. *Ex. gr.:* That every registered shepherd who can prove by proper printed reports, signed by his master, the lowest number of deaths in his flock, in proportion to its size, shall have a prize of ——— The next ten, say a prize of ——— each, and so on. 3. An Insurance Club, the master paying a small proportion towards its funds; and having special advantages for infirm and deserving labourers. But all these advantages—and this is an important reserve—to be forfeited by labourers out of members' employment longer than a certain time, except in case of illness, &c.; to secure the interest of members, and to keep men from renegading to other employment. These inducements are offered as much out of consideration of the farmers' as the labourers' interests. It is plain that our country is becoming increasingly a manufacturing country, and that “skilled labour” is more profitable than agricultural labour; and consequently more advantages must be given to the farm labourer, or else he will forsake his calling for something that pays him better. It may be said that the proper cure of this will be a proportionate rise in farm wages; but the farmer cannot keep pace with the manufacturer, for corn can be imported to us cheaper than it can be exported by us; but it is *vice versá* with manufacturers. America, too, is now engulphing many labourers, who can get one and two dollars a-day—in “green backs” though. I have had the honour to receive letters of approval of the objects of the Association from the Earl of Essex, the Earl of Verulam, Lord Ebury, Mr. Clare Sewell Read, M.P., and others. The Earl of Essex and Mr. Read may be regarded as authorities on such a subject, and they speak most favourably of the proposed Association. I shall be glad—and I hope farmers will take up the matter—to receive the names of any who will be willing to act in committee upon the matter, and of any interested in it; and to have suggestions in reference to the subject generally.

I have the honour to be, Sir, your obedient servant,

Hemel Hempstead, Herts, July 10, 1866. ANDREW REID.

SHEEP *VERSUS* CATTLE.

When Lincolnshire speaks, it behoves the agricultural world to listen. The spokesman for the county, this time, is Mr. William Torr; the occasion, a Hanover-square "weekly meeting;" and the subject, that old-fashioned inexhaustible one of "Sheep *versus* Cattle." Mr. Torr repudiated the idea of reading "a paper" on the question, because he objects to "everything in the shape of paper-farming;" so, of course, he was prepared to replace a cut-and-dried "paper" by something more lively, instructive, and improving. But unfortunately, his address, not two columns long in our last week's number, is ill-calculated for illustrating the superiority of a rambling discourse over a carefully-written essay. Half of it was what a schoolboy would call "an awful crib" from Randall's paper in an old *Journal*, headed and tailed by random talk of his own, stating facts without value, from the omission of half their conditions, and dealing in arguments which yield us no conclusions. From a man of Mr. Torr's practical knowledge and experience, this is a great deal too bad, seeing that he could have given us something more exact and demonstrative than a mere *ipse dixit* from his undetailed "experience."

What does he teach us? "I hold an opinion," he says, "that on second-rate grass lands, sheep have been, and can be made, far more profitable than cattle." A great many people think the same; and it is gratifying to hear that a first-class manager like Mr. Torr gives his voice along with many of his sensible countrymen. But on what details of cost and quantities is this "opinion" based? We have only Mr. Torr's assertion that it is "confirmed by practical experience." "Name, name," we cry, who has established the point? and where? and how? "There is not a greater improvement in farming than an allowance of oilcake to grazing sheep." Well, we have heard this before; and as vast numbers of farmers in Great Britain follow the practice, the probability is that it does not lose money. But surely, if the practice is worth urging at all, it should be recommended, not by simply affirming that it is good, but by offering debtor and creditor proof that it pays. Mr. Torr has sold bullocks under four years old at £45 each, from first-rate grass, by treating them daily to 8lbs. of oilcake a-piece; "and they paid well for their summer grazing." But how much more significant this fact would have been, had Mr. Torr informed us what the outlay as well as the return was, and had he shown whether or not the bullocks would have realized as much profit without the oilcake.

To exhibit the relative superiority of sheep to cattle, Mr. Torr adduces a case of hoggets sold at £5 a-piece: "You have here, say three hoggets, making £15, *versus* a very good year-and-a-half old steer, or, in many counties, two years old. See the great disparagement, and a large margin to spare." This, for anything we know, may be regarded by some people as a convincing argument; but for ourselves, we don't remember meeting with anything like it. What is the cost, we ask, of producing the £15 steer? and what of the £15 hoggets? If cash received is the sum total of the account, it becomes precious easy book-keeping; and as far as any comparison is concerned, we might as well represent the superiority of pigs to either sheep or cattle by instancing fat porkers of the same age sold for more money. A friend of ours, however, caps Mr. Torr altogether in the same line of argument, having established the superiority of pigeons to any grazing animal by selling a pair of year-old black carriers for £25. There is the comparison: three hoggets against two black carriers! "see the great disparagement, and a large margin to spare."

Of the other points which we gather from the address, one is that we may spread chaff, cut-straw, or almost anything upon second and third-rate pasture, in the absence of lime and salt or bones (which would be better), and the good effect is vouched for by the magical change effected on Mr. Torr's own farms. This, we believe, is a very valuable suggestion, and will be novel to many readers. The other piece of advice is, that when sheep have largely replaced cattle, and we are puzzled how to bestow our straw, we may consume more by horses all through the year, instead of foolishly spoiling our pastures with their hoofs. This is probably very sound teaching, although nearly as old as Adam.

Now, we have fallen foul of Mr. Torr's ideal agricultural communication, simply because he decried the more literary productions called "a paper;" and we venture to say that an elaborate and well-digested treatise, no matter how short it might be, in which the inferences were properly built upon a sufficient groundwork of facts, would have attracted infinitely more attention and have accomplished more good than a tissue of loosely-strung remarks, unsupported by evidence and the test of figures. We have had a great deal too much of this sort of thing; but Mr. Torr kept it up to the last. His reply to the debate ended thus: "As to the question of sheep *versus* cattle, he might state that last year he wintered over 3,000 sheep, as against 300 cattle; and his experience was that for every £2 he got from the cattle, he realised £5 by the sheep. The fact was that sheep were always returning money, no matter what the time of year." This, we suppose, was considered a clencher: the logic of the case was clear. But does the speaker glibly call his opinion his "experience"? or has he any statistics by which the relative gain was made manifest? What were the values of the two kinds of stock before and after the season's feeding? What was the total expenditure upon each? and what was left by each in manure?

The discussion of such a desultory discourse, as might be expected, partook too much of a watery nature, and digressed into almost everything but the topic really before the meeting. Mr. Frere suggested an alteration in the form of a lamb-gate, related how he managed to keep a bigger flock than formerly, cautioned poultry-keepers against overstocking, recommended crops of barley in place of wheat, and explained his winter tillage for barley. His white turnips, upon farmyard manure, stood the drought better than others upon artificial manure, which he attributed to the moisture "drawn up from below" after the ploughing-in of 8,510 tons of straw manure, *threefourths of which was composed of water*." Fancy the water in farmyard dung becoming available in the soil for moistening the earth about the roots of young plants, and six or seven tons of water per acre being thus applied, so as to beat the water-drill hollow! Would not a single heavy shower do more good than either? Mr. Frere concluded his observations by lamenting the continued absence of an artificial potash manure, in place of the potash of straw manure. Mr. Dent went strongly for winter-keeping sheep in yards, as a solution of the problem how to breed lambs upon heavy clays; from which Sir George Jenkinson drew the conclusion that you "might keep lambs anywhere." Mr. Wells would recommend nobody to force a breeding flock upon a stiff, tenacious soil unsuited for the purpose; Mr. Stratford very properly putting in a reminder as to climate and rainfall making all the difference, where sheep might do well in the field or only in yards. The Chairman, Lord Feversham, closed the conversation by sticking up for our herds, urging the impolicy of increasing sheep stock if, in consequence, our noble horned stock were to suffer any neglect.

We say again that very little can be learned from this "poverty-stricken meeting" of the "Royal;" and if no better information is forthcoming from members and council-men, could not the subjects themselves be selected of a more simple character? If you are not prepared to tell us whether, when, where, or how sheep will pay better than bullocks, can you give us a hint as to which is the best reaping-machine for a given description of crop and surface? because that is a point of vital interest to a good many hundreds of farmers just at this moment; and, as the wise man said, "a word spoken *in season*, how good is it!"

THE GAME QUESTION.

SIR,—There is one point in connection with the "Great Rabbit Question" lately agitated by Lord Denbigh and others, which I think deserves notice, that is the effect produced on pasture land by the overpreservation of game. From his lordship's very funny "Notice to tenants," it is fair to infer that he does not consider that the rabbits injure grass land; but is it so? Of course the damage of hares and rabbits on arable land is patent to every one not wilfully blind. Nobody can enter a game estate without witnessing the miserable spectacle of men spending their best days, their energy, and their capital, in fighting with a host of vermin, to see who shall reap a mangled and half-spoiled crop. I would not wish my enemy a worse position. But on grass land the thing is not quite so clear to a casual observer, although I believe the damage to be quite as great there; and I ought to know something about it, because my experience of the matter has come to me through the pocket, and thus it happened: Some years ago I took a farm, chiefly grass land, where a great deal of game was preserved; of course the usual promise was given that the game should be killed down, which of course was not done. I found the grass late in appearing, because the hares and rabbits bit it off as fast as it came in the spring; and when I took to market my beef and mutton, the butchers constantly objected to it, because having been grazed amongst game they could not reckon on much rough fat; in fact, they said my stock never proved well. Clovers were not worth growing, because there could be no early sheep kept on them. The mowing grass was one net-work of rabbit tracks, causing the mowers, and I am afraid their masters also, to use "words not fit for ears polite," and the grass so filthy near the coverts, that the cattle did not like the flavour of the fodder; as how should they? The ewes were only kept in creditable condition in winter by the aid of a great deal of artificial food, and even then in March some of them appeared to have copied the slim figure of their neighbours, the jack-hares. At length, to the satisfaction of the tenants, the estate passed into the hands of a gentleman (all honour to his memory), who killed the game and rabbits, and discharged the keepers. During the two or three seasons which followed (for he was not spared to us long) the clovers and grass came much earlier, the cattle throve considerably better, and there was a marked improvement in the condition of the sheep wintered on the grass, and also in the condition and weight of the wool, not to mention the improvement in the quantity and quality of the corn, which was very great. These are simple facts, and require little comment. A word on game preserving-generally, as between landlord and tenant. I suppose no reasonable man would wish to deny to his landlord any amusement which his tastes may lead him to follow on his own estates; for I think it very much to the interest of the tenant that his landlord should employ his time and his money there, and I will venture to say that there is no respectable tenant-farmer in England who would not do his utmost to keep a fair quantity of game, and take a pride in finding for his landlord or his friends all the sport a reasonable man could wish. But why place such a class of men under the surveillance of a dictatorial game-keeper, or his under-strappers the rabbit-catchers? Surely this must destroy all kindly feeling, not to mention the ruinous loss to the tenant by game damage. There seems to me to be something very degrading to both parties in a landlord seeking to make, it may be, a needy and hard-working tenantry bear the expense of his amusements. But, further, the excess of game of which we complain is not, as is generally supposed, kept entirely as articles of sport. I believe I speak within the mark when I say that on the majority of game-preserving estates 75 per cent. of the game is killed by the game-keeper *and his friends*, and in many instances a running account is kept with the fishmonger in the nearest market town. Again, all rabbits should be regarded as vermin, and the tenant should be allowed to destroy them as such; but I am sorry to say that they are too frequently held sacred by proprietors as a source of profit to pay keepers and to meet sundry other expenses connected with game-preserving. This state of things requires alteration before there is much temptation for a man to invest his capital in the culture of land; and I will own myself no true prophet if the cattle-plague and other reasons which have lately appeared do not effect a change in such matters, and if the effect should be that some landlords I know of should find it necessary to act more on the "give and take" principle, and to treat their tenants as *men* and not as *machines*, so much the better. No doubt there are many landlords (I know some) who have the good of their tenants at heart, and are willing, if necessary, to make a sacrifice for them; but this class does not own all the land—more is the pity.

One word to young men in search of farms. Whatever may be the inducement; however rosy the thing may look; as you value your chance of advancement in life, and as you value your peace of mind and comfort, take advice from one who has suffered, and don't take a farm on a game-preserving estate.

I am, Sir, your obedient servant,

A TENANT FARMER.

THE WARM WEATHER AND THE MEAT TRADE.

A weekly visit to the cattle market and dead-meat market of the British capital, and a daily perambulation amongst her butcher's stalls, her slaughter-houses, hide market, tallow-chandlers, and bone-boilers, at this season, suggests many things in the way of progress to those who wish to keep up with the steam-coach of the present day. And more than this; for such a visit proves that the meat trade has fallen, in many respects, a long way behind almost all other branches of commerce, whilst, by rights, it ought to have been ahead in the march of improvement. And the worst of it is the fact that those engaged in the trade are unconscious of being an inch behind their day and generation. This is doubtless a national pity.

But we need not dwell upon an unfavourable view of the subject, whose details we do not propose to discuss. In hot weather, stinking meat speaks for itself, whether it be in the railway-truck, the dead-meat market, the butchers' stall, or in the private family larder. To obviate smells is one of the grand sanitary questions of the day; and the practical problem to which we propose turning attention for the present is a chemico-mechanical one—the conveyance and preservation of meat at this season.

Salmon comes up to the capital in ice, so do mackarel and fresh fish of almost every kind. But packing in ice neither suits dead meat nor live cattle. The practice, however, of conveying fresh fish in ice suggests the conveyance of both live cattle and dead meat in an artificially-cooled atmosphere; and there are more ways than one of effecting this, on promising terms, both in a pecuniary and professional sense, more especially the land and sea conveyance of dead meat. Again, frosty weather, in the winter-time, is adverse to both dead and live meat; so that the reduction of our proposition to practice extends to the deficiency of heat experienced during winter as well as to an excess of it during summer, the mean between these two extremes being the grand desideratum at issue, or, more practically speaking, the lowest degree of temperature between these two extremes at which meat does not suffer harm, which will be found close upon the freezing-point.

The first practical lesson, therefore, which farmers, railway and steamboat companies, butchers, and private families have to learn, is that taught by the thermometer, viz., the proper degree of temperature at which cattle and dead meat should be kept—fat cattle before they are slaughtered, and the dead meat which they yield up to the time it is placed before the fire. There are thus two degrees of temperature involved—the one for live cattle, and the other for dead meat. No doubt there is a medium degree in which neither would suffer much harm. This may be granted; but it is nevertheless manifest that dead meat requires a lower temperature than live meat; and in both cases the thermometer requires to be closely studied by each of the above parties in their respective departments—by the farmer in determining the proper temperature at which his fat bullocks and sheep should be kept immediately prior to, and when being slaughtered, and for cooling, setting, and delivering of the carcases to railway and steamboat companies, when he slaughters his fat stock at home; by railway and steamboat companies in providing the best temperature for the conveyance of both live stock and dead meat; by the butcher, as in the case of the farmer; and by consumers, how best to preserve their meat before it is eaten. There is involved in this work an extensive field for action, and we need hardly add that the thermometer must be a more frequent and welcome instructor and guide than it now is under the present system.

A proper temperature, however, is not the only thing that requires to be artificially provided both in summer and winter, proper ventilation or a free circulation of pure air being equally indispensable. It is a well-authenticated fact that a confined atmosphere is highly injurious, not only to the health of live cattle, but also to the preservation of dead meat in a sound, wholesome state; and the practical *rationale* arises from the impure air or gaseous matter evolved from the surfaces of both—from the lungs and skin of the ox and sheep, and from the surface of carcases, not only during the time they are cooling, but also up to the time they are disposed of by the cook and consumer. There is nothing which butchers and cooks dread more than a close, confined atmosphere, especially at this season.

Cattle-houses, slaughter-houses, cooling and setting-houses, railway-vans, butchers'-shops, and family larders may be kept cool in the warm weather of summer by the removal of the heat through the instrumentality of evaporation. Cold, from being a negative quality, may be produced by the removal from the meat of combined heat or caloric, a substance somewhat analogous in its physical properties to light, and between which some have supposed there exists probably a close identity of relation. Cold is also produced by various freezing mixtures, by refrigerating machines, &c. It may also be produced by the condensation of the atmosphere. The reader is no doubt familiar with Æsop's Fable of "blowing hot and cold," which is a practical illustration of this. Thus when your fingers are cold you open your mouth wide and blow hot upon them an atmosphere rarified as much as possible under the circumstances of the case, but when you burn your fingers you condense the atmosphere and blow cold, through a small orifice, by contracting the mouth as in the act of whistling. The truth of the fable is best understood by the simple experiment itself of blowing hot and cold. All these cooling practices are in daily operation, as the sequel will briefly show; but much improvement upon them is necessary to fit them for keeping cattle-houses, slaughter-houses, railway-vans, butchers'-shops and larders, cool in the hot weather of July.

In tropical climates the practice of cooling by evaporation by covering vessels and bottles with wet clothes or mats to keep their contents cool is common, the evaporation thus produced carrying off the heat; and those who have pursued that practice when residing in warm countries, as in India, seldom fail on their return home to continue it in seasons of oppressive heat. Indeed, there are few houses in which it is not in use in some way or other so as to keep butter and the like cool. Again, it is common for brewers'-dray carts to be covered in the summer time with wet cloths for the same purpose, carrying off heat by evaporation. The roofs of both Houses of Parliament have water thrown upon them to keep them and the interior cool. But with the exception of the last example, all these practices are carried out in a very rude and out-of-date manner.

Of refrigerating machines and processes in operation, such as that in use by the Wenham Lake Ice Company, examples are in a higher state of perfection. But it is only during exceptional extremes of heat that such examples would be required on land in the process of cooling and setting meat. On board steam-boats it may be otherwise. But condensed air at a temperature several degrees below that of the ocean can be easily thrown into the hold of steam-boats, similar to the plan adopted in the American war ships or monitors, one of which, the Miantomonoh, is now on a visit to this country. By means of a flat feeding worm or pipe round the outside of a steam-boat below water-line, the atmosphere by being forced in through this pipe by pumping apparatus, would be thrown into the hold sufficiently cool to preserve meat during a short distance, as from Scotland, Ireland, and the Continent, to the English market.

With regard to the practice of "blowing hot and cold," it is that now in use amongst butchers. When a draught can be produced in a narrow passage—leading, say, from the slaughter-house to the shop, or into the shop through any back door leading into a court-yard or garden—it blows cold. But when the hot breeze or wind comes in at the front door and window upon which the sun perhaps is blazing, then it blows hot. So that at one time it blows hot, at another cold, and not unfrequently both hot and cold at opposite sides. In other examples it will be found blowing hot in the morning or up to mid-day, and cold towards 4 or 5 p.m., when the sun begins to get low. More detail need not be advanced to show how rude and imperfect the practice is at present exemplified.

No doubt it is a striking illustration of *Æsop's* fable; but in point of fact it is, more frequently and correctly speaking, the practice rather of blowing stink out at the door than cooling the meat, by keeping the atmosphere in the slaughter-house and shop at a temperature sufficiently low to prevent decomposition. The thermometer will be found to prove the soundness of this conclusion; for, as Liebig observes in his Animal Chemistry, "Heat is like the action of a mechanical force. By heat a number of substances have been decomposed, and in these cases its action is entirely analogous to that of a mechanical force. Heat acts like a wedge which is forced between the atoms." Butcher-meat is a very complex organism, and hence very liable to undergo chemical change, unless kept cool; for the lower its temperature the more consolidated it becomes. It is heat that keeps water in a fluid state: remove the heat, or caloric, and it becomes solid ice. At the natural temperature of the living body meat is soft; but as you cool it down it becomes more and more solid as the temperature falls. Butchers may boast of their well-ventilated cool shops; but so long as their meat is soft, all trade gossip of this kind is only "blowing hot and cold" on the subject, for the soft meat tells its own temperature, whatever blue frocks may say to the contrary.

Our farmers and butchers, and indeed the general body of consumers, are a long way behind their transatlantic cousins in the preservation of their meat by means of a low temperature, artificially produced. True, Necessity is the mother of Invention, and no doubt necessity compels the inhabitants of the Southern States of the Union to adopt frigorific means for the preservation of many perishable things which are not even thought of in the northern and colder regions lying towards the Canadas. But that is no argument why a meat-consuming people should not follow a good example when given them, and so improve upon it as to adapt it to their own peculiar exigencies.

Tomlinson in his *Cyclopedia of Useful Arts and Manufactures* says, under "The preservation of food," "In many parts of the United States every housekeeper has a small ice-safe, in which through the warm season all kinds of perishable provisions are kept. Public ice-houses are also maintained by the butchers, so that under the burning climate of South Carolina there is less loss in the way of butcher's meat, fish, game, &c., than in the comparatively temperate summer of our own metropolis. The meat is sent to the ice-house near the market every evening, and is cooled down to near the freezing point during the night; when exposed in the stalls next day, it retains its low temperature for a long time."

Our butchers and also our farmers, who send dead meat to market, are familiar with the importance of getting the newly-slaughtered carcase cooled down to a low temperature, or in other words, to "set firm." If thus cooled, it comes up from the northern counties of Scotland in better condition than meat slaughtered in the capital; and in Newgate Market there is a keen scramble every morning for finely set meat of this kind by our first-class butchers. But strange to say, instead of adopting any artificial means to produce so important a result, the very reverse is too commonly the practice, slaughter-houses being mere sheds, with low slated or tiled roofs, as if purposely to absorb the greatest possible quantity of caloric from the sun's rays, so as to keep the meat hanging below up to the degree of temperature at which it rapidly goes wrong! In our provinces science has not made a whit farther progress amongst farmers!

Into the question of the proper degree of temperature to which meat should be cooled down for market and use, we do not propose to go further at this time, it being enough at present to show that it can be easily cooled down to any degree of temperature required by means of refrigerators, and at a sufficiently low price to pay any farmer or butcher. Most intelligent farmers and butchers are now familiar with Yandall's zigzag flat-tube refrigerator, for cooling brewer's wort, patented in 1826; or with Wheeler's archimedean screw-pipe refrigerator; or with Hodge's patent refrigerator, in which the caloric is carried off by means of fans and a blast of air. Now, as heated air is a fluid, subject to similar laws as heated wort, all that will be necessary is, to pass this heated air through flat-zigzag pipes, &c., in an ice-house below or adjoining the setting room, by means of a bellows, pump, or fan, and to carry off the heat of the sun by means of evaporation from wet clothes, straw, &c. That a cheap ice-house can be made and furnished for little more than the price of a fat sheep, need hardly to be gone into piece-meal; and as for the chaff or straw, and the filling of the ice-house every winter with ice, such may be set down at nothing out of the farmer's pocket; so that putting the two ends of the project together, it would pay itself in a single warm season on large farms.

As the direct heat of the sun can be removed by evaporation, it is only when the temperature of the atmosphere during night does not fall sufficiently low, that artificial cold, so to speak, would be required from the ice-house to cool and set firm newly-slaughtered carcases. The consumption of ice therefore by some of our best refrigerators would not be great in the lowest and warmest localities. It would of course be different in different localities; but into minute details of this kind our present limits will not permit us to enter, suffice it to say that in our southern provinces it would not be large. In the north it might not be required at all in cold seasons; but no farm should be without an ice-house and refrigerator, so as to have the temperature of his cooling and setting rooms completely under his control. As yet such a conclusion may no doubt sound strange in the ears of old-school farmers; but the day is not far distant when it will be otherwise in every province of the kingdom.

Steamboats and sailing vessels for the conveyance of dead meat would require large refrigerators; but, if carcases are cooled down to the proper temperature when put into a railway van, the heat of the sun can be removed by evaporation; so that were the carcase van covered by a thick woollen cloth, a small zinc cistern on the top full of water—say at Aberdeen—would keep this cloth wet, and thus bring up the meat to the capital at the proper temperature. On the top of the railway van there might be a layer of feathers, or matted wool, or other non-conducting body under the woollen cloth; but once start the project, and railway companies will find no end of carcase-van covers for summer and winter wear, out of which to choose the best. And the expense of the whole affair is such a trifle, that railway companies have no valid excuse to make to the public for the continuance of the present seething and putrefying practice. And carcase vans, we may be permitted to add, are not the only railway vehicles which ought not to be kept at a seething temperature.

The requirements of the butcher are similar to those of the farmer. There is a large number of intelligent butchers in the British capital, and also in provincial towns, who are more than anxious to advance in the march of improvement; and they will readily gather from the drift of our observations that their long wished-for desideratum is beginning to be seen looming in the distance. It must be admitted, however, that there are a greater number of blue frocks who still rather prefer the reduction of *Æsop's* fable to practice, than what we suggest above! As for private families, ice has now become one of the daily necessaries of life in Old England; and if they cannot get proper ice-safes (nicknamed refrigerators) of home manufacture, they can import them from the United States of any size and pattern, to meet the circumstances of the family.

We have purposely said nothing about lowering the seething temperature of the Metropolitan Cattle Market, of salesmen's and butchers' layers, &c., the general conclusion being that were the dead-meat trade carried out as now proposed by those engaged in it—*i. e.*, intelligent farmers and butchers doing business directly with each other as contemplated in the preceding observations—the live-stock trade in butcher's meat would soon cease to be experienced a public nuisance in all our large towns. Practical detail in support of this is wholly unnecessary; for the live-stock trade could not compete with the dead-meat trade under the improvements contemplated, either in the quantity, quality, or price of meat—more especially in the warm weather of summer and frosty weather of winter. Farmers and butchers who can yet hold up "check" to the contrary, only prove that they do not comprehend the facts of the case in question So far behind are the vast majority of them on the subject, that they do not even know what soft meat in hot weather means as a question of temperature! It is useless therefore to reason with such men, experience and the pocket being the only arguments to which they will listen, and for which they invariably pay the piper sweetly in the form of losses and low prices.

ENGINEER.

HIGH FARMING AND THE EMPLOYMENT OF LABOUR.

Among the farmers of the empire, with the combined system of tillage and grass, the gentlemen of the Lothians stand A 1, and of these we will select Mr. George Hope, of Fenton Barns, with 670 acres, and Mr. Peter Handyside, of Fenton Deem, with a similar holding, as fair examples. Mr. Handyside, about forty-five years ago, improved 100 acres of light moor land, producing blue grass unfit to feed sheep or cattle, by ploughing it up and covering it with better soil, subsoiling eighteen inches, a crop of oats, and carting the clay over the light lands, becoming in a few years equal to the best land of the farm, producing as much as £40 per acre in potatoes. The system of Mr. Handyside's farming—2-5ths generally in grass (half being two years and half one year old), 1-5th turnips and potatoes, for winter-keep of sheep and cattle; and 2-5ths grain crops. On this farm a large quantity of oilcake is used on the pasture and in the yard, the sheep getting 1lb. daily, and cattle 5lbs. to 7lbs., by which means two flocks are turned out instead of one. A man and pair of horses are kept to every forty-five Scotch acres. They employ a steward, four labourers, besides ploughmen, twelve women in winter for four months, and twenty-six in summer cleaning the green crops. The women get 1s. per day. The rents could not be paid if the land was in grass, nor would any employment be then given except to a couple of herds; a man and a boy are required in addition, to look after the cattle in summer. The women are Irish or Highland, and do their work well. As to the manures, &c., the same is carried forward as on Mr. Hope's farm, described in the *North British Agriculturist* of the 20th June, which we recommend to every proprietor and farmer to read. From it we extract that the farm of Fenton Barns, Haddingtonshire, consists of 670 acres under a lease of twenty-one years, the family being on the farm for eighty years. One-third consists of fertile loam, one-third of heavy clay of medium fertility, and one-third of yellow moorish sand on alluvial clay. All the farm has been drained and the ditches tilled, thus adding to the acreage working land. In 1864 a stationary steam-engine of ten-horse power was bought at a cost of £650, with 2,000 yards of wire-rope, which has done well, grubbing or cultivating seven acres per day and harrowing ten acres across. The grubber enters the soil to the depth of eight, twelve, and fourteen inches, as required. In the autumn of 1865 103 acres of wheat were sown in place of potatoes and beans, 27 acres of the bean land having been gone over twice, and 94 acres of stubbles grubbed. Since steam power was applied the turnip crop has been got in early, and has been superior. The crops of the present year are—potatoes, 82 acres; beans and vetches, 33, growing in rows sixteen inches apart; turnips, 88 acres; wheat, 126 acres; barley, 88 acres; oats, 54 acres; mixed rye-grass and clovers for cutting, 21 acres; pasture, 85 acres of young grass depastured. Extent of second year's pasture, 50 acres; in permanent pasture, 3 acres; turnip seed, 15 acres of purple top. Mr. Hope holds another farm (Dirleton) of 220 arable acres, and 500 of links and pasture, bent chiefly growing on the links or sands. The sands are clayed at the rate of 200 carts per acre, and in this way 100 acres have been made fertile. On Dirleton farm the present crops are 31 acres potatoes, 50 of turnips, 38 of barley, 9 of wheat, 34 of oats, 6 of rye, the remainder in pasture, the land being grazed for three years—the land being ploughed out of grass for the potato crop. The market produce of corn, beef, mutton, and wool has been doubled from the system of tillage compared with grass. Number of farm-servants on Fenton Barns, nineteen by the year; at Dirleton, one shepherd, three ploughmen, and two cottmen. On both are numbers of day labourers, and thirty to forty women and boys, the annual amount paid for wages on the two farms being £1,850, or at the rate of £2 for each acre cultivated. Besides the steam-engine, thirteen pair of horses, are kept. Cattle kept on Fenton Barns—one shorthorn bull, five cows for rearing calves, twelve cows belonging to the farm-servants, eighty cattle fattened. Sheep (Leicester)—Number of ewes, 110; and cheviots, 180 to 200. 100 tons corn and cake, and 200 quarters grain are consumed by the stock. Manures used this season—Fifty-six tons Peruvian guano (£750 worth), seven tons nitrate of soda (£120), seventy tons superphosphate (£480), or over £1,300 worth; besides manure from Edinburgh, costing 2s. 3d. to 2s. 6d. per ton, and 1d. per ton per mile rail. Fifty or sixty tons lime are annually brought to the farm and mixed with weeds, road-scrapings, &c. The annual outlay for feeding substances and manures exceeds £4 per acre; and for the last thirty years £2 per acre has been spent on every acre under cultivation. While we do not wish small farms turned into large, because small farmers are the bone and sinew of this country, we want our graziers who give no employment to follow the examples of Messrs. Handyside, Hope, and such gentlemen, who pay annually in wages from £1,700 to £1,800, instead of, as here, a couple of herds, with lower wages than the girls in Scotland cleaning the turnips. We are much indebted to Mr. Handyside for the information he has sent us from the article we wrote on, an "Alderman of the National Association," calling English and Scotchmen coming to reside among us and give employment "bloated farmers." These are the men to stop our population from emigrating; but the National Association deters them coming here to spend their capital and make money.—*Sligo Independent.*

THE YORKSHIRE AGRICULTURAL SOCIETY'S TRIAL OF MOWERS.

The following is the official report of the Judges who awarded the prizes at the trial of the grass-mowers:

TO THE PRESIDENT OF THE YORKSHIRE AGRICULTURAL SOCIETY.

SIR,—I am requested by my colleagues, Messrs. Caldwell and Kay, to certify that after a complete and satisfactory trial of the mowing machines that appeared to compete for the premiums offered by the Yorkshire Society, we have awarded the prizes as follows, viz.:—First prize, to Mr. A. C. Bamlett, of Thirsk, for mower, price £26; second prize, to Mr. Henry Kearsley, of Ripon, for mower, price £25. We highly commend the new machine, price £18, exhibited by Messrs. Burgess and Key, of London; and commend the machine exhibited by Messrs. Samuelson and Co., Banbury, price £18 18s. We beg to congratulate the Society upon the success of this trial, which was admitted by all the exhibitors to be the most satisfactory and complete of any that has taken place in this country. The excellent arrangements both as to the crops to be cut, the time of testing the machines, and the facilities afforded the judges in doing their work, are points to which we wish to draw attention. The great improvement that has been made in these machines caused close competition, and the work of all was most creditable, rendering our decision one of considerable difficulty. In coming to that decision we were guided by closeness and evenness of cutting (a point of the first importance), strength and durability of machine, excellence of construction, and comparative draught as determined by the dynamometer kindly lent by the Royal Agricultural Society. We have prepared tables showing these points, which, together with a detailed report, we shall be happy to forward after the conclusion of the implement-trials in August, if the Society wish it. Only one haymaker was exhibited—by the Reading Iron Works Company. We had this tried, and consider it a strong, useful machine, quite deserving of the Society's prize, if eligible. I beg to remain, yours truly,

July 10. JOHN COLEMAN.

THOROUGH CULTURE.

Culture, to be thorough, must be perfect. That which is anything otherwise cannot be *thorough*. It embraces seasonable culture, as well as all other technical terms applied to the cultivation of the soil. It begins with the preparation of the soil from which a crop is designed to be taken. In a former communication I advocated "fining the soil," and largely by mechanical means. I here adduce some reasons why we resort to the use of mechanical, instead of awaiting the action of nature in a fallow.

First—A fallow, to be complete, requires the use of mechanical means, and is of little avail without; to assist the sun, frosts, and weather to do their part in a fallow, we must expose the soil to their action; to do this we must plough.

Secondly—Land costing the proprietor £30 to £60 or more per acre, is too valuable to lie still to recruit lost energies, when an equal recovery may be gained by a judicious use of manures, stirring and exposing the soil to the action of the atmosphere to the greatest possible extent without detriment to the growing crop.

All that is made fine by whatever means admits air and moisture, which act upon the seed, causing it to germinate; also acting upon the soil, dissolving the plant food held therein, which is taken up by the rootlets of the growing plants.

A soil not made thus fine holds this food locked in its own embrace, and will not impart it except imperfectly: moisture and air are not so readily admitted; the soil being compact is cold, drainage less perfect, and in every way less fitted to support vegetable life in its more advanced state.

A frequent stirring of the soil not only acts mechanically to fine the same, but has the effect of manuring, warming, and moistening it. Every stirring loosens the soil, prevents a crust forming on the surface, admits the air, which contains moisture, ammonia, etc., which dissolves the minerals in the soil, to be in turn given out to the growing plant through its roots. A finely-stirred soil is not so long soaked by rain, but allows the water to pass quickly along; the dews are easily absorbed, thus preventing it from becoming perfectly dry. Thorough culture would then demand a frequent stirring of the surface to keep it constantly permeable to the effects of the atmosphere and the vegetable food with which it abounds.

Thorough culture includes *seasonable* culture, in that it cuts down and roots up weeds when they are quite small. It does not wait till they have become so large as to have taken possession of the soil, requiring double or triple the time and strength to subdue them. Less still does it wait to have the ripened seed scattered by the four winds of heaven over the face of the earth, to take root to be again disseminated by the natural laws of propagation and increase. Thorough culture tills the soil and plants at the time they will be most benefited by it. Here, for example, we introduce you to farmer Slack's cornfield; the corn is six inches high, and the weeds among it still higher. Now, if farmer Slack had never allowed these weeds to have grown, but had hoed them up when they first showed themselves, and frequently stirred the soil, how large would his corn have been now? If he goes and cuts them down, he will not make the needed amends, for very likely the corn, after growing partially shaded, will have delicate health, and will require some time to recover from the shock occasioned by the change; the fact is, the weeds should have never been allowed to grow by farmer Slack, for work as vigorously as he may the rest of the season, he can never regain or catch up. Consider, too, how much the digging out such large weeds injures the corn. No wonder it looks sickly and stands still for some time; the roots are more or less broken and disturbed; the leaves suddenly exposed to a glaring sun, "wilt" and perhaps wither. If the corn recovers at all from this shock, to go on to seed, it will be considerably later in the season, and both the quality and quantity inferior to what it would have been under good management.

Does not this instance illustrate a general principle? The rule holds good of every cultivated crop. They should be planted in their proper season, and cultivated at the time they most need it, when they will be the most benefited by that culture. If farmers would thrive in their vocation to the greatest degree, they should learn to undertake the tillage of no more ground than can be thoroughly tilled. When this time comes and is acted up to, we shall hear vastly less complaint of failure caused by the seasons, want of manure, and the various other causes attributed thereto.—WM. H. WHITE, in *Country Gentleman*.

BILL TO ALLOW FARMERS TO KILL HARES AND RABBITS.

The following is the draft of a Bill to Amend the Laws as to the Killing of Hares and Rabbits in Scotland. A motion for leave to introduce the Bill will be made in the House of Commons by Sir William Stirling-Maxwell, M.P. for Perthshire:—

"Whereas it is expedient to amend the laws in reference to the killing of hares and rabbits in Scotland:

"Be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons in this present Parliament assembled, and by the authority of the same:

"1. That from and after the passing of this Act it shall be lawful for any tenant in occupation of lands in Scotland, under any lease, or agreement of lease, where it is not otherwise expressly provided by himself or by any one person appointed by him in writing, to kill and destroy hares upon land in his occupation, in like manner as it is now competent for tenants in occupation of lands in Scotland to kill rabbits thereon.

"2. That no tenant in occupation of lands in Scotland shall be debarred from killing hares and rabbits on lands in their occupation otherwise than by an express stipulation inserted in the lease, or agreement of lease, under which he occupies the said lands, or otherwise by written agreement duly executed.

"3. That where a tenant in occupation of lands, as aforesaid, shall have appointed a person to kill hares upon the lands in his occupation, he shall transmit to the Clerk of the Peace for the county or stewartry wherein such lands are situated, a written nomination of the party so authorised, in the form of schedule A to this Act annexed, which nomination, or any nomination to be made of any other party in lieu of such party first so appointed, which may be made from time to time at the pleasure of the said tenant, shall be registered by the Clerk of the Peace in a register to be kept for that purpose, and which register shall at all times be open for the inspection of any proprietor of land in the county or stewartry, or any officer engaged in the collection of the public revenue.

"4. That it shall not be necessary for a tenant in occupation of lands, as aforesaid, who shall kill hares or rabbits on any lands occupied by him, to pay in respect thereof any assessed taxes or to take out any licence to kill game, in terms of the Act of the twenty-third and twenty-fourth years of the reign of her present Majesty, chapter ninety.

"5. That no person authorised to kill hares as aforesaid, and who shall be employed by a tenant of lands to kill hares and rabbits thereon, unless otherwise chargeable, shall be liable to any duty of assessed taxes as gamekeeper, and when so employed shall not be deemed or taken to be a trespasser, in terms of the Act of the second and third years of his late Majesty King William, chapter sixty-eight."

SALE OF THE LATE GENERAL ANGERSTEIN'S STUD.

THE ARAB CROSS.

But a feeble imitation of Sledmere was the Weeting Hall sale. Not only from the damaged reputation of the stock was the company small, but the class of animal offered was comparatively wretched. One good thing it did for breeders, and that was, it most clearly showed how by determined perseverance in the cultivation of one favourite type of stock any one using ancient blood, from which no ungainly element can float up, may most certainly in the end, as R. Booth, as Jonas Webb, as Sir Tatton, secure (having sufficient means, time, choice, and patience) a flock or herd of which the bystander shall pronounce, "Why, really as like as a handful of beans." This should be the aim as it would be the reward of the skilled breeder. Sad, however, is it to record that in this instance the General's taste was not that of the public. Hence the marked indifference to his sort, so that a sale only ran up hundreds, which might have culminated in a comfortable lump of thousands to be invested. In life he was well able to hold his own as to his pet sort, and he deserves great praise for having succeeded in his object to the full.

Our duty, however, is to draw the moral for ourselves and other breeders; otherwise we would gladly have passed on without a single remark. If a man wishes to make an agricultural experiment pay, he must not swim up stream: go as far as he is obliged with the ruck, then strike out a line of his own.

As generally unique in their own especial character were the mares of Weeting Hall, but then their prevailing characteristics were such as the English gentleman and trainer do not approve. An excellent authority has told us that it takes five generations to breed out sufficiently the bad points of the Arab cross. Notwithstanding Mr. Tattersall's episode upon the Arab element in the blood of Touchstone, it is impossible not to conclude that one's grandchild only can expect to reap the advantage we are supposed to yield our native stock by an infusion, once so sighed for from its scarcity; but since the home importation of favourite steeds from the Crimea, perhaps only too extensively tried. However, a sorry lot, compared with the handsome, clean-limbed, powerful, broad-chested mares that advanced astounded and so grandly into the ring at Sledmere, were the sort we had travelled some hundred miles to see in a mood of excited curiosity.

With plain head, slight, long cannon bone, and loaded shoulder-point, those little mares redeemed their character only, as we must allow they did very fairly redeem it, by their stylish croup and good action. Herein, emphatically they followed the Arab breed, which, strangely enough, with the characteristics of a loaded shoulder point and heavy shoulder, has yet free action, such as an unenlightened Englishman would not predict. The Welsh ponies have most certainly suffered in form and character from the disturbing influence of Eastern sires that have from time to time been turned among them on the mountain side, and our inspection of the Weeting Hall lot prejudiced us more than ever against the attempt to spoil two good sorts by an injudicious sudden combination.

Let us leave these violent alliances to the human race. Our farm stock we must not so dare to trifle with. To particularize, however: Upon our arrival an hour before the sale, we found the mares and foals, with an occasional filly, drawn up under the shade of some elms, in a paddock. Our inspection was painstaking, our notes having been copied exactly as made before the sale came off, which the reader can compare, if it pleases him, with the prices realized, and lay a corresponding value upon our introductory remarks. The foals we should state showed far more promise of excellence than the mares possessed. This may be accounted for by the use the General lately made of fashionable turf blood. Around the ring, and by the rostrum where Mr. E. Tattersall presided, under an alternation of sultry atmosphere and threatening rain, were assembled a motly collection of country gentlemen, chiefly from the neighbourhood, leading farmers, and an occasional horsebreaker; a few dapper trainers, especially when the yearlings appeared; and a number of heavy-jowled heroes, whose talk was of betting, and whose conversation was redolent of spirits and slang.

But to return: No. 1 was a mare possessed of a long, slight cannon-bone, hollow back, short quarters, and a ewe neck: her walk was long and easy, and she was sold to Mr. Carter for 15 guineas. No. 2 was a very handsome Arab-like mare, all over the Arab character; spoilt however in a certain degree by the English cross, which had reduced the size of her gazelle-like eyes and shortened her elastic pastern from what the native breed shows—Mr. Hammond, 36 guineas. No. 3, short quartered, but with excellent fore-legs, three white feet, and a Rifleman head; good thighs, a long back, stylish all over; very racing-looking—Lord Stamford, 160 guineas. No. 4, good stylish quarters, hocks all to pieces, capped and curby; short neck, steep shoulders, excellent fore-legs—T. Dawson, 100 guineas. No. 5, heavy shoulder, flat sided, short legged, eyes weeping; bad unshapely foal—Mr. Adair, 30 guineas. No. 6, hollow back, small under the knee, with a rough well-made foal—Mr. Newton, 30 guineas. No. 7, strong limbed; no character of any sort—Mr. Marsham, 20 guineas. No. 8, rich colour; good quarter; long cannon-bone; front unequal to her quarters—Mr. Adair, 30 guineas. No. 9, disfigured quarters, owing to an accident while young; a rough foal—Mr. Kersey Cooper, 20 guineas. No. 10, a ragged common sort of mare, with a good foal—Mr. Hammond, 35 guineas. No. 11, an excellent foal; mare wants decided character; a short back, with many excellent points—Mr. Green, 41 guineas. No. 12, a fine foal, the mare rather Galloway looking, but a rare mover—Mr. Kersey Cooper, 40 guineas. No. 13, a short-quartered short back, Roman nose, good eye, a rich colour, generally stylish; a bad foal—Mr. Cameron, 55 guineas. No. 14, showed all the bad points of the Arab cross: tied under the knee, heavy shouldered, light cannon-bone—Mr. Hall, 36 guineas. No. 15, a fine roomy mare with her hind leg wonderfully under her, a good head; excellent foal: the mare rather of a coaching than a racing stamp in general appearance—Mr. D. Mauregy, 155 guineas. No. 16, common looking—Mr. Michel, 20 guineas. No. 17 had a certain amount of style, but a heavy steep shoulder and bad cannon-bone; a good foal—Mr. Barker, 30 guineas. No. 18, good quarters, thick shoulders—Mr. Barker, 40 guineas. No. 19, deep chested, flat sided, with four white feet; walks capitally: foal poor—Mr. Tinsley, 35 guineas. No. 20, a common, heavy-shouldered galloway—Mr. Mauregy, 40 guineas. No. 21, good points, tail well on, low and lengthy mare, good arm; poor foal—Mr. Hall, 40 guineas. No. 22, good shaped, but shoulder steep—Mr. Butler, 22 guineas. No. 23, a good mare, only small under knee—Mr. Hammond, 36 guineas. No. 24, a goodish but thick-shouldered sort of mare—Mr. Adair, 25 guineas. No. 25, just enough English to spoil the Arab type—Mr. Mitchell, 10 guineas. No. 26, broken kneed, with a Suffolk-horse style of neck, good loins, large head—Mr. Mauregy, 21 guineas. No. 27, beautiful eye, good line from ears to tail; excellent fore-legs, but stands with her knees rather bent: the truest shaped mare of the lot—Mr. Mauregy, 48 guineas. No. 28, long pasterns, well turned quarters; small under the knee, thick shoulders and neck; bad mover—Lord Orford, 55 guineas. No. 29, low and lengthy, Roman nose, good eye—Mr. Bamford, 20 guineas. No. 30, a common mare—Mr. O'Connor, 30 gs. No. 31, a pretty mare, with fine action, but curby hocks—Capt. Machel, 151 guineas. No. 32, a gipsy's mare—Mr. Rawlinson, 15 guineas. No. 33, plain head and light bone under the knee—Mr. Gayford, 24 guineas. No. 34, useful, but mean looking—Mr. Branford, 37 guineas. No. 35, plain head—Mr. Robinson, 29 guineas. The two-year-olds sold indifferently, and the yearlings no better; and after a few stallions had been offered, the company parted, the prevailing feeling being how much more might have been made of such good blood if the public demand rather than private peculiar taste had been consulted—if Arabs had been let alone, and the young stock forced, as is the usual practice of successful breeders. The country is, however, greatly indebted to enthusiast-experimentalists of this sort. All honour to them! as we only wish that this attempt, at least, had resulted better, in a pecuniary point of view.

THE MIDDLE-PARK YEARLINGS.

Mr. Blenkiron having determined this year to divide the sale of his young stock, the remainder of those bred here, as well as some at Easby Abbey in Yorkshire, were on Saturday, July 7, disposed of by Mr. Edmund Tattersall. We subjoin a list of buyers and prices:

	Gs.
A black filly, by Dundee—Palmeria (dam of Sweet Briar, Our Jim, &c.), by Faugh-a-Ballagh, foaled May 21 (Mr. Ten Broeck)	50
A chesnut filly, by Dundee—Cossack Maid (dam of Maid of the Mist, Sutton, Bohemia, &c.), by Hetman Platoff, foaled June 14 (Mr. G. Angell)	100
A bay filly, by Wild Dayrell—Theresa, by Touchstone, foaled April 9 (Mr. H. Goater)...	160
A chesnut colt, by Marsyas—Ada, by Knight of St. George, foaled May 25 (Mr. Hope Johnstone) ...	60
A bay colt, by St. Albans—Vesuvienne (dam of Crater, Lava, Xurullo, &c.), by Gladiator, foaled April 27 (Sir F. Johnstone)	320
A bay colt, by Newminster—Diomedia (sister to Weatherage, and dam of Diomed, Bunch, Satyr, &c.), by Weatherbit, foaled March 23 (Mr. Johnson)	170
A chesnut colt, by Mandricardo—Merry Wing (dam of David, Ann, Merrythought, &c.), by Birdcatcher, foaled April 26 (Mr. V. Morgan)	155
A bay filly, by Orlando—Victrix, by Voltigeur, foaled April 20 (Mr. Mackenzie)	140
A chesnut filly (sister to Change), by Weatherbit—Miss Aldcroft (dam of Wetsail, Changeable, Aldcroft, &c.), by Ratan, foaled April 2 (Mr. G. Angell) ...	300
A chesnut filly, by Weatherbit—Kate (winner of the 1,000 Guineas), by Auckland, foaled April 5 (Mr. G. Angell)	230
A bay filly, by Weatherbit—Miss Erskine, by Loup Garou, foaled April 5 (Mr. M. Dawson)	250
A chesnut filly, by Dundee—Rose of Cashmere (dam of Wild Rose, Acolyte, Rose Chéri, &c.), by Bay Middleton, foaled May 3 (Count Batthyany)...	353
A chesnut filly, by Newminster—Mare (dam of Naughty Boy, Young Rapid, &c.) ;by Hampton, foaled April 17 (Lord Winchelsea)	400
A bay colt, by Newminster—Entremet, by Sweatmeat, foaled March 10 (Mr. T. Robinson)...	320
A bay colt, by Marsyas—Pastrycook (dam of Paste, Saffron, &c.), by Sweetmeat, foaled April 20 (Admiral Rous)	170
A chesnut colt, by Dundee—Moodkee (dam of Greenwich Fair, Himalaya, &c.), by Venison, foaled May 13 (Mr. Reeves)...	170
A black colt (brother to Bel Demonio), by Weatherbit—Augusta (dam of Attaman, Harvest Moon, &c.), by Birdcatcher, foaled March 25 (Mr. Pryor)	700
A bay colt, by Newminster—Aspasia, by Pyrrhus the First, foaled March 20 (Mr. W. Day)	460
A bay colt, by Stockwell—Typee (dam of Nukuheva and Mazeppa), by Touchstone, foaled May 21 (Count Batthyany)	1,000
A brown colt, by Orlando—Gossamer (dam of Prelude, Prologue, &c.), by Birdcatcher, foaled April 13 (Sir F. Johnstone)	700
A bay colt, by Dundee—Exact (dam of Q.E.D.), by Birdcatcher, foaled March 31 (Mr. V. Morgan) ...	520
A brown colt, by Prime Minister—Tested, by Touchstone, foaled March 18 (Mr. Reeves)	400
Total	7,125

THE CHURCHILL YEARLINGS, THE PROPERTY OF MR. R. BELL.

	Gs.
See-saw, brown colt, by Buccaneer—Margery Daw (Mr. J. B. Morris)	700
Purveyor, bay colt, by Caterer—Cygnet (Mr. W. Morris)	220
The Piper, bay colt, by Trumpeter—Maggie Lauder (Mr. F. Pryor)	420
Vivier, bay colt, by Trumpeter—Ordeal (Mr. J. Woolcot)	65
Churchill, brown colt, by Ambrose—Eveline (Mr. W. Morris)	150
Gloire de Dijon, chesnut filly, by Trumpeter—Creeping Rose (Capt. W. Cooper)	350
Stockholm, chesnut colt, by Stockwell—Harebell (Mr. Ten Broeck)	710
Chesnut colt, by Newminster—The Jealous One (Mr. T. V. Morgan)	100

KITCHEN HIPPICS.

"We find in *Galignani's Messenger* of the 2nd inst. the following announcement: 'The first market for the sale of horseflesh will be opened on Monday next, at No. 3, Boulevard d'Italie. The price will be about two-thirds cheaper than beef.' "—*Sporting Life*, July 4.

Gently stir and blow the fire,
  Put the sirloin down to roast;
Vegetarians curb your ire,
  "*Horseflesh!*" is the reigning toast;
Here, at last, a dish I find,
Meet for men of stable mind.

On the dresser see it lie,
  Oh the luscious white and red
Finer meat ne'er met my eye,
  On the sweetest oats it fed;
Now horse-radish scraped with skill,
Its *true* mission can fulfil.

'Cute receipts I have in shoals
  For each part from tongue to croup;
Mother of a dozen foals
  Makes good stock for gravy soup—
Dearly loves a Ring believer
"Corpses" full of "pencil fever."

Cutlets from the Cookson stud
  Prophets' brains and hearts will stir,
Horse laughs show the pure "blue blood,"
  Ditto a "Horse-godmother;"
Horse-leech you may swim at ease,
And smile at all the similes!

Cabbage drags the soul to earth,
  Porkers have the measles' ban,
As of old in Centaur birth,
  Horse "assimilates" with man;
Each man bears, so Huxley said,
A hippocampus in his head.

Why is horseflesh held in fee
  By Remus, Rallywood, and Guider?
Give them beef, and leave to me
  Round of tough and "rank outsider,"
But the fillet for my spit
Is "Tommy's yearling" favourite.

Colour don't affect the meat,
  Bay or chesnut, grey or brown;
Stallion steaks are quite a treat,
  When "he's thickened and let down;"
Still I don't despise "a weed
Of a filly" fricasseed.

Both love "Trojan Horse,"[*] I know,
  And, though hardly of a feather,
William Gladstone and Bob Lowe
  Shall hippophagise together;
With good Bass, and Bordeaux wine,
Epicurus! how we'll dine!

H. H. D.

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[*] See Reform Debates.

DEATH OF MR. RICHARD GARRETT, OF LEISTON.

Mr. Richard Garrett was born at Leiston on February 1st, 1807. His father and grandfather before him conducted there a business which was destined afterwards to assume world-wide operations. Like most men who are to take an active part in life, he bore the weight of responsibility very early. At a time when most young men are beginning to be initiated into business, he was already conducting and enlarging that of the Leiston firm. When an opening presented itself, he threw himself into it with an ardour of enterprise which could not be surpassed. At comparatively an early age his labours, which had brought him wealth, had also begun to tell upon his constitution, and he left the more immediate superintendence of his immense trade about ten years since to his sons. In addition however, he invested some spare capital in connection with some relatives in a new firm in London, and the amazing success of the Camden Brewery within a few years of its formation justified the expectations which his sagacity had formed of it.

As a public character his career was very remarkable. When a man is immersed in commercial operations, he is generally so absorbed by them as to be comparatively careless of all things else. In Mr. Garrett, on the contrary, the interest in the public welfare appeared to keep pace with his exertions for the advancement of his family.

No movement in the county could be started for the general good without his throwing himself heartily into it, both with money and labour; no calamity could happen without his being the originator or the cordial supporter of an effort for the relief of the sufferer. Many a family, who would have been well-nigh ruined by the cattle plague, has had to trace to his promptly setting forth a plan of help, commencement of succour, and effectual escape from a ruinous loss. Anything for the benefit of the agricultural classes could reckon upon his most earnest help. It was amusing sometimes, when a worthy society was prosing its way along under difficulties, to see the difference which his joining the committee, or even appearing at the meeting, made. Among the public movements which first enlisted his interest was the Royal Agricultural Society of England in its earliest days, and he was one of the first exhibitors at its annual meeting; afterwards he was elected, for many years in succession, as one of the members of the Council, and no one took a more active part in its useful operations.

The Smithfield Club also found him a most earnest supporter, and he was among the first who promoted and supported its exhibition of agricultural machinery.

When its increasing popularity and success required a more commodious building, he projected with others the Agricultural Hall in Islington, and shared the general exultation at the rise of a building which is not more commodious for the gathering of an immense assemblage of men and things than remarkable as an instance on a new and large scale of utilitarian architecture.

The Agricultural Benevolent Institution engaged his sympathies for the benefit of farmers who, through no fault of their own, and not very remunerative occupations, might be unsuccessful; and it was a high pleasure to him, after long canvass, and even paying the subscriptions of many others, to see a less fortunate neighbour secure of a small provision for his declining years. The number of subscribers who owe their connection with the Society to his untiring influence is very large. The same remark may be applied to the Idiot Asylum, at Colchester, which received princely subscriptions from his own purse, and also from the list of its contributors, largely supplemented by his exertions. Among other public movements which owe much to him as their originator, was the formation of the East Suffolk Railway. Convinced of the necessity of the line, he was soon in contract with capitalists, whose shrewd views, perhaps, after all, without the aid of wealthy and liberal men like Sir Morton Peto, might have miscarried; but the result in this case was, that a line was soon formed, not only to Lowestoft and Yarmouth, but a branch to Leech, Aldborough, and Framlingham, for which Mr. Garrett was pecuniarily liable to a great extent. Like other large shareholders he lost nothing by it, through the unexampled liberality of the worthy baronet who was the contractor. One of the last matters which engaged his attention was the despatch of a later train from Shoreditch to East Suffolk, so as to give to business-men an hour or more beyond the time they had by the train leaving at 4 25 p.m. as heretofore. His representation will take effect at a time when their promoter is no longer able to avail himself of a change. On the formation of the volunteer force he was among the first to promote the movement; he looked on the safe and quiet condition of England as the foundation, not only of his able success, but of all the prosperity which has distinguished this country, and therefore he felt it to be the duty of every man who valued this state of things loyally and vigorously to uphold it. The country will not easily forget the first great volunteer *fête*, in Carlton Park, in September, 1861, when the nobility and leading men of the county, from the Lord-Lieutenant downwards, met a thousand volunteers at the first county review, and dined together afterwards in a large marquee which he had erected in this park. The event was characteristic; it was in the infancy of the movement, when many had not made up their minds about it, and when a large and influential demonstration could help to establish and consolidate it in the neighbourhood: it is needless to say it was magnificently carried out. Mr. Garrett, of all others, appeared to have had nothing to do but to enjoy the society of his friends and witness the success of arrangements which were mainly projected weeks before. With him a month before was a busy time on every great occasion, so that on the day itself he had little more than current affairs to attend to.

The crowning effort of his life was, perhaps, his association with the committee of the Framlingham Middle-class College. To his liberality was owing the gift of £500 and a porter's lodge; while the nave of a chapel was erected by his munificence, and several thousands of pounds were contributed by friends and gentlemen whom he had induced to befriend the rising institution. Those who laboured with him can bear witness to the increasing toil which ushered in the movement and preceded every committee meeting. If at any committee his opinion always carried weight, it was not merely because of the solidity of his judgment, but because the previous days had been spent in correspondence, journeys, and investigations, which paved the way for an effective decision. He had many years the great honour of enjoying the entire confidence of the Lord-Lieutenant of the county. His Lordship, in his effort to forward every good movement, has lived to save Suffolk from being proverbially behind in the race, which now assumes a foremost rank amongst the counties whose resources are for the most part agricultural. For this purpose Lord Stradbroke deigned to invite throughout and to accept, unasked, the counsel of one who, in his business capacity, was well versed in the condition of the county; and thus within the last few years honours began to come thickly upon Richard Garrett. His main reward consisted in seeing the increased prosperity of Suffolk and the advancement of others; but when he received at the hands of Lord Stradbroke, as her Majesty's representative, the position of a magistrate, and afterwards his commission of deputy-lieutenant, he could not fail to set a high value on such honours; in this capacity he was presented at Court, and never was the privilege given to one who had done more to promote loyalty in his native county. It was not the first time that the esteem in which he was held had brought him into immediate contact with the highest personages in the Court circle. In England, as well as abroad, if he found himself in the foremost rank it was not from preference, but because the active man gets the brunt of the battle. He always considered himself as belonging to the middle-class, and was proud of calling himself a working "bee." For nothing was Mr. Garrett more thankful than the possession of a wife who was invaluable to him for nearly forty years. With a sound judgment and true affection for him, the advice of such a counsellor—especially in the case of rather an impetuous man—was beyond all price. It is not necessary beyond this to intrude into the domain where the depth of intensity of bereavement and use are proportionate to the strength of the ties which had united a most large-hearted father to a happy and attached family. At every leisure interval his great delight was to ride on his favourite pony "Gaffer" round the pleasant scenes of Carlton, and the much-prized evening spent in the bosom of his family, generally a time of rest, with music and quiet chat and social enjoyment, while he in his patriarchial arm-chair was the happiest of all.

His funeral took place at Carlton church, on Saturday afternoon. It is a peaceful spot, a quiet little church, one of the smallest in the county, in view of the Hall, and in the midst of his most cherished enjoyments. Here his most peaceful days were spent, after the more trying times of life were over.

He never was absent on Sunday from the little church when illness allowed him even to rise from his bed. He with his family, with a few simple villagers, formed about the whole parish. To sum up, in social life he was most large-hearted and affectionate; in business, enterprising and energetic; as a public man, most unwearied in furthering the welfare of the county, of the agricultural interest, and of every one whom his efforts might relieve in misfortune or advance in prosperity.

On Tuesday night, June 26th, at twenty-five minutes past eleven, he expired in the simple faith of a Christian. He had always cultivated a most reverent spirit, though greatly engaged till recently with business affairs. He clung to the good old paths, with a deep aversion to new schemes and philosophies: his religion was something to rest on and honour—not to trifle with; and his loss will be felt increasingly.

DEATH OF THOMAS RAYMOND BARKER, ESQ.—This respected and excellent gentleman died on the 23rd June, at his residence at Hambleden, near Henley-on-Thames, at the venerable age of 88. He was a younger son of John Raymond Barker, Esq., of Fairford Park, Gloucestershire, where the family has been seated for many generations, and where it is now represented by a nephew of the deceased. Mr. Raymond Barker was originally a Commoner of Oriel, and was thence elected a Fellow of Merton College, in this University, and he was one of about seven surviving gentlemen in England who graduated in the last century. In addition to his academical seniority, Mr. Barker presented, till within the last two years, an almost unique type of the admirable style and bearing of the old English country gentleman. At the same time he sustained that bearing without a scintilla of affectation, and simply as cognate with his early habits and associations. He was an urbane, and an unselfish man, devoting his time and fortune, for many years past, to the advocacy and aid of religious societies and benevolent objects, as well as to public business. Living near the border of the two counties, he was a distinguished magistrate of Buckinghamshire and Oxfordshire. And his valuable services to the Royal Agricultural Society, and as Chairman of the Thames Commissioners, will long be remembered. The latter body is now virtually defunct, so that Mr. Raymond Barker will probably have been the last of its chairmen. His wife (who was a Miss Cocks, a member of the Somers family) predeceased him a few years ago, leaving no issue.—*Oxford Journal.*

DEATH OF MR. CHARLES STOKES, OF KINGSTON.—We deeply regret to announce the death of this gentleman, which took place on the 16th June. For something like half a century, Mr. Stokes was among the foremost men of his time in improving agriculture and the breeding of stock. As an eminent farmer, the county at large owes to his efforts a deep debt of gratitude. His efforts and his example in themselves did wonders; and as a leading member of the Royal Agricultural Society, of the Smithfield Club, the Farmers' Club, and of various kindred associations, the value of Mr. Stokes's long services can scarcely be over-estimated. His advice and friendly interposition were eagerly sought in his own neighbourhood, and his loss will be generally felt over a wide district. Though eighty years of age, Mr. Stokes was hale and hearty, and regular in the discharge of all those duties which he had taken upon himself, until within a week or two of his death. Among others of his public services, we may mention that for nearly twenty years he was Chairman of the Shardlow Board of Guardians, and as such a true and consistent friend to the poor, as well as being a just guardian of the ratepayers' interests. The Guardians, at their meeting on Monday last, passed a fitting tribute to his memory, in the shape of a resolution to be entered on their minutes.—*Derby Mercury.*—[It is only within the past few years that Mr. Stokes had declined acting as a judge at the agricultural shows, an appointment which he had filled perhaps more frequently than any other man.]

There is so direct a moral to be drawn from the life of a good man, his career may be studied with so much advantage by his successors, that it becomes a duty to note with some emphasis the losses which agriculture has so recently sustained. Within only a few days or even hours of each other, Charles Stokes, Raymond Barker, and Richard Garrett have been taken from amongst us. The two former of these had far exceeded the three-score-and-ten of the allotted span; but Mr. Garrett, at under sixty years of age, was still comparatively young, although his will no doubt be the most memorable story of the three. Mr. Barker and Mr. Stokes were both born, as it were, to the stations they came to fill so well—the one as a country-gentleman, and the other as a tenant-farmer; but Mr. Garrett had to fight his own way in the world, and to make the place and rank he held so honourably. And if, as has been recorded of one of our sweetest poets, there was nothing he touched but he adorned, so may it be said of Richard Garrett—there was nothing he embarked upon, but in which he succeeded. Whether it were in developing his own business, or in founding some public institution, Mr. Garrett brought the same force of character into play, as in the end he was tolerably sure to have his own way. There was naturally a greatness of mind that would have its influence on others, associated with an instinctive activity that must be doing something. So that when, weary of the excitement of hard work and longing for rest and retirement, we see Richard Garrett giving over the trade he had made, and the town he had built, to the care of his children, it is only to follow him into fresh speculations. There is a County College to be established, to which scheme the name of Richard Garrett appears as the most energetic of secretaries and most munificent of subscribers. In his own peculiar and impulsive manner, he sets an example that must have its weight; and we fancy we can hear him now urging upon "My Lord" or "Sir Edward" in his familiar, kindly but ever respectful tone, the good policy of their only making a beginning when they were sure to go on. It was the same with the Benevolent Institution, for which year after year he regularly brought up one of the largest lists of donations and subscriptions, obtained of course by his own personal exertions. We had the pleasure of sitting next to him at the recent dinner of that society as held only a few weeks since, when he was as sanguine, as cheerful, and ready as ever to set his friend Mr. Peck, the architect, upon some further good work. He was, moreover, as true a friend in private as he was a liberal patron in public. Ostentation, indeed, had but little to do with the actions of Richard Garrett; and many a struggling man, whose need has been known no further, has had to thank him for the ready hand which stayed him in his downfall. In a word, Mr. Garrett not only made a fortune for his family, but a name for himself, and for both have his children much to thank him. His honour should be their own, as, beloved in the first instance by the people in his employment, he gradually obtained the respect of the whole county, and more particularly of the gentry. It is said that our English squires are very sensitive to the advances of successful men in trade; but it speaks much for

Mr. Garrett's discretion, as well as his abilities, that no such feeling was ever evinced towards himself. When his firm friend, Lord Stradbroke, proposed to put him on the Commission of the Peace, the other with much modesty and equally good taste rather demurred as to the reception he might meet with from the magistrates. But the Lord-Lieutenant was ready to answer for them one and all, and we believe that by no class will the deceased gentleman be more regretted than by those to whom he had raised himself, no less by his virtues and kindliness as a neighbour, than by his energy and integrity as a man of business. Personally, we have seen much of Mr. Garrett, or we should not have said so much as we have done. But whether we met on the show-ground, in the council-chamber, or amongst the pleasant paths of Carlton, it was everywhere alike easy to see how fairly and how conscientiously Richard Garrett had earned that distinction he attained to. As we have said already, there is a fine moral in his story as that of a man who lived for something more than merely making money, and whose own happiness centred in the happiness of others.

For a still longer period, Mr. Charles Stokes was, more or less, a marked man in the annals of agriculture; and few have more frequently acted as judge at the Royal and local shows; whilst in his own more immediate neighbourhood he was continually called in as valuer or referee. This all speaks to his honest, upright character, pointed as this was by a very strong religious feeling, and, as a specimen of the old school of English yeoman, respected alike by his equals and his superiors, Mr. Stokes occupied a deservedly high position. To the Smithfield and Farmers' Clubs he was very true, rarely missing the Christmas week, as only in December last he was still in his place at the dinner, where he gave the toast of "The Vice-Presidents." Mr. Raymond Barker was more identified with the Royal Agricultural Society, in whose fortunes from the first he had taken a very active interest, having had for a long period the Finances mainly under his care as Chairman of that Committee. Latterly, however, increasing age had compelled him to retire from public life, but it will be gathered from a brief memoir given in another page, that, as with Mr. Garrett and Mr. Stokes, Mr. Barker was ever mindful of those who had the claims of neighbours to advance, as that whatever he might engage himself upon abroad, he never neglected his own more immediate duties about home. The moral is here again before us.

The death has also occurred during the past week of Sir Henry Muggeridge, who a few years since held a leading position on Mark Lane. Sir Henry's fortunes were not so equal; but since his failure he had again been establishing a good business, being naturally a shrewd able man. He had, however, long to contend with infirmities, which warred against his success either as a merchant or a citizen; and the moral of his life, if only the more impressive, is the less satisfactory.

THE LATE MR. RICHARD GARRETT.

At the monthly meeting of the Council of the Royal Agricultural Benevolent Institution, on Tuesday, July 3rd, Lord Spencer presiding, the following resolution was passed:

"The Council having met for the first time after the death of their valued colleague, Mr. Richard Garrett, of Carlton Hall, Saxmundham, cherishing as they do a sincere regard for his memory, desire to record their grateful sense of his important services to the Institution in liberal contributions to its funds continued from its foundation—in actively promoting the success and extending the influence of its anniversaries, at which he served the office of steward on six several occasions, and in personal labours rendered as honorary local secretary to the Institution, an office which he filled with singular efficiency and an unwearied devotion to the best interests of the Society."

Resolved, unanimously, "That a copy of the foregoing minute be transmitted by the Secretary to his widow, and that it be expressed to Mrs. Garrett and, through her, to the members of the family, the sincere condolence of this meeting for their recent heavy affliction."

At the same meeting, on the motion of Mr. T. Scott, seconded by Mr. G. Shackell, Mr. Abraham Garrett was elected a member of the Council in the place of Mr. W. Torr.

FOREIGN AGRICULTURAL GOSSIP.

We return to the Mende district state agricultural show (France)—a topic part heard of a fortnight since. There was not a very great muster on the occasion of implement exhibitors: 23 entries connected with the district and seven on the part of strangers made up the list. Some absences further reduced the modest total, and the plant exhibited occupied little space. Without the tools (unfortunately a little used and old) of M. Grousset, director of the farm-school of the Lozère, without the implements of the house of Pinet, and without the collection of a local agricultural society, this department of the Mende exhibition would have been almost a desert. However this might be, the implement show at Mende this year was a more numerous one than in 1857, and cultivators were enabled to gather more than one useful lesson from it. Three kinds of apparatus failed to make their appearance, which would have been quite in their place, viz., manure pumps, haymaking machines, and horse-rakes. On the other hand, the house of Pinet exhibited a useful windmill for supplying motive power, which was awarded a gold medal. As there is but a moderate supply of water in the plateaux of the Lozère and the Aveyron, the Pinet mill is expected to prove very useful. The award made of the prize of honour excited some surprise. The laureat has been connected with the agriculture of the Lozère for a rather long period, and he some years since printed a small manual which was distinguished by excellent advice; but his operations had been interrupted, and they had as it were escaped from memory. Some surprise was accordingly excited by an official award to the effect that they surpassed others: the award was entitled, nevertheless, to credit and respect as the jury comprised some good practical men. It was, perhaps, difficult to arrive at a decision in the Lozère, as few departements present so many differences in the conditions imposed on agriculture by nature. Thus the departement has four distinct kinds of land radically distinct from each other in every respect: jurassic soil, granitic soil, schistose soil, and volcanic soil. These lands each form an important mass, cantoned in a nearly exclusive fashion, having each their climate apart, their own exigencies, and their own special production and outlets. Still more, in the same land there are the most numerous and sudden changes of altitude, viability, &c. The jury sought to give an example of the reduction of cereals and the extension of herbage and forest cultivation in a granitic district; at the same time it was intimated that they had not found at the laureat's all with which they wished to meet. Can the decision be rectified by the calcareous district which forms in the centre of the departement a compact working mass, or by the schistose district with its chesnut-trees and mulberry-trees? Doubts were expressed on both these heads, although there was a numerous competition indicating great progress as compared with 1857. We have gone gossiping on; but, after all, we have failed to note who the "laureat" really was. Let the fact be now put on record that he was the Comte de Morangies, who received a sum of £200 and a silver cup of the value of £140 for his working of

ges, near Langogne. The cattle classes comprised nearly
entries, and there were very few absentees. The prize-
showed how clearly the superiority of the Aubrac breed
established, while by the side of it came the Mezenc breed;
latter, be it remembered, showing no mixture with the
rs-de-Lans breed. As regards the Aubrac breed, the jury
obliged to add honourable mentions in almost each sec-
and several in the same, while three animals of any value
scarcely be found in the whole Salon category. As
s the Mezenc breed, one honourable mention was
ed, while all the prizes were given, and what is more,
to very good reproducers. Since the Valence show, four
since, the Mezenc breed has never been so brilliantly
ented as at Mende. M. Eyraud, especially, appears to
ise all the good qualities of a deserving breeder; and it
ly be desired, in the interest of the Haute-Loire, that
yraud may form a great herd. The Aubrac breed has
e been represented by more beautiful types than by
rought to Mende by M. Charles Durand. Straightness
gance of form united to strength; power of traction,
d with delicacy—these were the qualities apparent in
animals of M. Durand; and they secured him all the
s without dispute. Among the prize animals and
ed immediately after them, there was a very great
, although some of the latter were excellent. M.
products showed, in fact, such distinction that they
at first sight, all competitors; and there is this
ted with them—they are the well-sustained de-
f animals which received prizes in former shows,
e beasts which themselves appeared with success
g. At M. Durand's, in fact, breeding is scientifically
carried on. His property of Sallet-Basses, to which
-of-honour jury awarded a gold medal of the
e, comprises a vacherie of more than three hundred
up in the Aubrac mountains; and persons who have
t state that subjects of first prizes could there be
almost at hazard. Without depreciating the merits
mpetitors of M. Durand, at the Mende show and
e, it may be said that very few unite, like him, the
ristics and qualities of a breeder to those of an exhibitor.
ubrac herd-book, indeed, should ever be founded, M.
will be a very large contributor to it. M. de Bernon
d at Mende, as he has often done at other exhibitions
part of France, almost the only exhibitor of Charolaise
. This fact is considered to show that the Charolaise
s adapted for few situations in this district; and the
ed in accordance with the facts, in proposing that the
mes of subseqüent years should accord only a sin-
e to this breed; already the prizes are reduced to two.
gued that the breed might be confounded, without any
ience, in the category of pure French breeds. Some
d Tarentaise subjects were exhibited in this latter
by *trappistes* of the Ardèche. If the Tarentaise breed
succeed in the high mountains which this religious
abits, as well as in the neighbourhood of Montpellier,
portation will become a matter of congratulation.
dess, it is clear that persons sometimes go very far to
t could be found immediately at hand, as it would be
to put one's hand on finer beasts, or beasts more capa-
elding better results, with a little selection and care,
cows of Gérandan, reared on the heights of Lozerian
e, in the canton of St. Amans. A proprietor of this
trict, M. Salles, would certainly have carried off the
e for cows, with a beast of this breed, but for some
ible defects of form. Durham crossings had a prize
n in the programme; but this is considered by some
h. Having regard to the requirements of the case, the
y of miscellaneous crossings would, it is argued, have
nd amply sufficient. A small number of crossed Dur-
hown at Mende, was not without value, although in
nd section only a single head was exhibited. As regards
ellaneous crossings, the jury suppressed several prizes.
Lozère is a sheep district, and must become so still
it has an excellent breed of sheep, with which it
do something. It is also a district where the consump-
pork is very usual. Among 217 animals which figured
catalogue in the sheep and pig classes at Mende, the de-
t comprised many exhibitors, and in neither one nor the
of these two classes were good animals at all lacking.
g the sheep we ought perhaps to mention the animals of

M. Allet of the Isère, and those of M. Plagnes of the Lozère' remarking as regards the latter that their right to figure at the show was disputed with some appearance of justice. As regards the remaining animals exhibited, there was a want of system apparent, and it would seem that both breeders and purchasers had still much to learn. The entries made of pigs were generally good; they were Berkshires, Hampshires, and Leicesters. These races have responded to the ends anticipated from the pig in the district, where it more especially supplies meat, and the Lozère has quickly adopted them. Nevertheless, the jury was not so well satisfied with the pigs as with the sheep, and several prizes were suppressed. In addition to the prizes awarded for cattle, sheep, pigs, and poultry, premiums were also given to farm servants who had distinguished themselves for the care which they had devoted to cattle. There was also an exhibition of agricultural products. In the Lozère, cheese is one of the principal products, and at the Mende show it was represented by some very good specimens; in this department M. Sinègre carried off a gold medal. A medal was even awarded for gaseous beverages, although it is difficult to see what connection any effervescing drink can have with agriculture. Medals were also awarded for hops, sausages, wine, oil, beetroot, potatoes, preserved olives, pears, apples, honey, &c. An exhibition of forest products was organized by M. Grosjean, the sub-inspector charged with administration of the forest service in the Lozère. This exhibition, although decided on so late in the day that it did not figure in the official catalogue, was, nevertheless, of a very remarkable character. The object of the authorities was evidently to show the departement of the Lozère to itself and to its visitors; manufacturing, mineral, forest, and even artistic exhibitions were brought together by the side of stock and agricultural products. It was not without interest that the public witnessed the woollen fabrics of the manufactories of Mende and Marvejols, which give a considerable value to the sheep produced for a considerable distance round those towns. The exhibition of the argentiferous minerals of Vialas, Meyraeis, and other parts of the departement, which was very fine as regards specimens, had also the advantage of indicating the industrial future reserved for the Lozère, when viability shall have been rendered easier in it, and when railways approach it nearer and cross its surface. But the forest exhibition was of still more importance, as it tended, first, to show what it was formerly almost ignorant of, viz., its resources in various woods; and secondly, the importance, the mode, the processes, and the utility of the re-woodings and turfings executed by virtue of the laws of 1860 and 1864. No departement of France has more need of wood and grass than the Lozère. Its nakedness everywhere strikes the eye; on its declivities the earth is constantly falling, precipitated as it is by rains; and only 6 per cent. of its surface is occupied by timber, although the proportion might be carried to 30 per cent. with advantage. To attain this object, meritorious efforts are being made both by the inhabitants and by the local officials. The forest exhibition at Mende comprised, first, a collection of seeds, and secondly, a collection of the woods now existing on the Lozèrean soil, while a third division gave illustrations of the re-wooding operations executed, according to argilo-calcareous, granitic, or schistose soils. There were also some specimens of plantations effected since 1862, and of exotic trees and forest novelties. In a fourth section, finally, there were forest implements and tools, plans for local re-wooding operations, &c. The splendid trunks of pines, firs, and beeches which were exhibited were calculated to prove to the Lozère that it has nothing to envy as regards other forest districts if a policy of preserving and extending timber is still further developed; and the next generation will find great wealth on its soil if the present should decide on investing a large amount of its capital and attention in timber-growing operations.—A district state agricultural show has been held this year at Strasburg, for the seven departments of the Moselle, the Bas-Rhin, the Meurthe, the Vosges, the Haut-Rhin, the Meuse, and the Ardennes. The last gathering of the kind took place at Strasburg in 1859, and to measure the space traversed in seven years, and to mark the continually increasing appreciation of these state shows, it will be sufficient to compare the totals of the animals and implements exhibited at the two meetings of which the old capital of Alsace has now been the theatre. In 1859, 300 head of cattle competed for the prizes offered, while in 1866 the total had risen to 434. As regards implements, the difference was still more considerable, the number shown having been 197 in 1859, while in this year it rose to 413. Perhaps, however, it will be well if we pass on to the similar show held at Nantes. which comprised in its circumscription the seven departements of the Côtes-du-Nord, Finistère, the Ille-et-Vilaine, the Morbihan, the Loire-Inférieure, the Maine-et-Loire, and the Mayenne. Possessing a mild and ordinarily humid climate, with a generally granitic or schistose soil, this part of France, which has become one of the principal centres for the production of cereals, is eminently adapted for the growth of herbage, as is shown by the importance of its stock-breeding, which was brilliantly reflected at the Nantes show. Since the travels which Arthur Young made in this part of France, more than 1,000,000 acres of heath have been broken up, and the population has been very largely increased. The land previously cultivated has been submitted to a more judicious succession of crops, and the stock has been improved, while it has become more numerous. In this respect the two departements of the Maine-et-Loire and the Mayenne, united to Brittany to form the district conscription, may be certainly reckoned among those parts of France which have made the most progress in improvements, especially during the last twenty years. The Nantes show justified and proved this: it was carried out under the direction of MM. de Sainte-Marie and Malo, inspectors-general of agriculture, and the entries of animals, implements, and agricultural products compared as follows with those made at the preceding meeting in 1859:—

	1866.		1859.
Cattle	440	......	321
Sheep	106	......	43
Pigs	70	......	47
Poultry	92	......	86
Implements and machinery	537	......	349
Products	95	......	162

Statistically, then, the Nantes show of 1866 showed a considerable progress upon the Nantes show of 1859. There were, besides, a horse show and a flower show organized in addition to the district show itself. The 440 head of cattle shown might be subdivided into the following categories: Vendean races, 124; pure Breton races, 67; various pure French races, 22; pure Durham races, 36; various pure foreign races, 23; Durham crossings, 70; and miscellaneous crossings, 98. The category of Vendean races might be divided again into pure Nantaise and Parthenaise. The pure Nantaise was represented by 97 subjects, of which 35 were bulls and 62 were cows and heifers; but with the exception of two fine bulls and two heifers belonging to MM. Hamé, Boiscourbeau, and Boisteaux, the whole of the 28 animals designated under the name of Parthenaise showed a marked inferiority when compared with the Nantaise. The latter, produced in the fertile valleys of the Loire and the Sevre near Nantes, are from their great size and general conformation peculiarly adapted for working operations; and of all French breeds it is most important to preserve their original characteristics. The pure Bretonne breed, which formed the second category in the cattle show at Nantes, presented a remarkable *ensemble*. The show comprised 40 females and 27 males, among which the five bulls of the Princess Bacciocchi, and MM. Legoff and Olivier, as well as the cows and heifers of MM. Feunteun, Conan, and Golhen were much admired. The two departements of Finistère and the Morbihan sent for exhibition almost the whole of the animals shown under this head. These two departements, although they are making progress, have still a great extent of heath to break up, and they have not yet attained such an abundance of forage production as would enable them to apply themselves to the breeding and grazing of cattle. They still keep to the small Bretonne bred, which, an old denizen of the heaths of the district, gives in rather large quantities a milk which is peculiarly adapted for the production of butter. It is evident at the same time that this breed is experiencing the happy influence of a more advanced agriculture, which will enable it to attain progressively a greater development while presenting the precious qualities which are peculiar to it. If the category of miscellaneous French breeds presented at Nantes only a small number of remarkable subjects, it was not the same with Durhams or their mixtures, which offered the finest collection of the kind which has yet appeared at a French district State show. By their number (169), as well as by the beauty of most of them, they created a favourable impression with regard to the agriculture of the departements of the Maine-et-Loire and the Mayenne, which sent the greater part of the animals exhibited. We must return to the subject of the Nantes show as soon as possible.

GAME PRESERVATION.

The evils of game preservation on the corn crops can be best seen during the present month, and we are therefore not surprised that complaints of damages by game are now frequently reaching us. The destruction and injury arising from excess of game can never be accurately determined. The picking of the seed at the period of sowing, and the eating of the tender blades during the earlier stages of growth, cannot be satisfactorily estimated. Where parts of fields are eaten down by hares or rabbits, where roads are cut through the standing crops by the former, where the joints or knobs are eaten from the stalks of oats and wheat for the sake of the saccharine matter contained in them, the extent of the damage may be approximately ascertained. For the ascertaining of such game damages the most competent valuators are those who have themselves experienced losses from game. Even with such experience, however, it is difficult, nay, almost impossible, for valuers to estimate the irregularity and lateness of the maturing of the crops, and the consequent inferiority of the produce. Under such circumstances the injured crops being tardy i ripening are late in being harvested. Whilst thus standing after neighbouring crops are down, they are liable to extensi depredations from the congregation alike of winged and four-footed game; and when at last cut down are exposed to increased risk of untoward weather in the in-gathering.

The valuation of damage by game invariably produces d satisfaction to all parties concerned. The occupier is dis pointed that the award of the arbiters does not come up to h own estimate or that of his friends'. The owner, on the oth hand, not only regards the valuation as excessive, but consider that adequate allowance has not been made for the inju caused by grubs, crows, wood-pigeons, and other destroyers o farm crops. Game preservers, as a rule, either cannot realis or will not admit, the serious losses inflicted by game. Whe however, a game-preserving landlord becomes a keen farmer, he almost invariably institutes a warfare against hares and rabbits, and even ceases to breed pheasants on a large scale. Surely, therefore, landlords ought not to take offence whe enterprising farmers complain of their crops being injured b excess of game, nor should they feel aggrieved at the amou of damages awarded by competent valuers.

From the indifference of the growing crops, especial throughout Scotland, and from the losses in some count from the cattle plague, farmers obviously cannot this y afford to submit unrequited to damage from game. Th having cause of complaint should lose no time in making plication to their landlord or his agent for redress. By mutu arrangement one or two persons should be named to act arbiters to assess the damages. In the event, however, of t landlord refusing to have the damages valued, or not replyi to the request for arbitration within eight days, applicati should forthwith be made to the sheriff to appoint value Copies of the award made by the valuers should be lodged wi the clerk of the court, and also with the landlord or his age On most properties the amount of the damages will be allow out of the current rent rather than permit the case to go Court. Frequently the damage for one season is granted, b only on the understanding that such a claim is not to be peated. In some instances a still more objectionable course pursued; the amount of the valuation is allowed out of t current rent, for which, however, the receipt in full is wit held, so that the tenant may at any future time be called up to pay up the sum allowed as damages which had been th virtually admitted by the landlord to be fairly due. Certain no high-minded landlord would repudiate the justice of a clai which at any previous time he had virtually admitted; bu as a matter of business, tenants should in such cases ende vour to secure a receipt in full. It is obvious that prese difficulties should always be faced, and, if practicable, ove come, instead of being deferred, to become perhaps, at som future day, a source of irreparable ruin.—*North British Agr culturist.*

CALENDAR OF AGRICULTURE.

This is the general harvest month in Britain, except in the extreme northern parts, where it is protracted into next month. Cut grain crops fully ten days before the dead ripeness happens: the straw will be more juicy, and the flour will be whiter and more doughy. Wheat is cut by hand-sickle, tied into sheaves, which are placed in shocks of twelve, and, when dried by the sun and wind, the crop is lodged in barn, or built into thatched ricks. Roofings: Zinc or corrugated iron will soon be adopted to cover rick-yards, and save expense of thatching. Upright standing crops on level and very even grounds are conveniently cut by machinery, which lays the crop in swathes, that are tied by hand into sheaves. Barley and oats are cut in the same way, or mown by scythe, carried loose, or tied into sheaves some few days after being mown. Peas are cut by hand-sickle, and laid into heaps. In fine weather, neither labour nor expense must be spared in getting the crops cut and housed. Have plenty of hands, and allow beer to the poor labourers in no stinted support. A sparing parsimony in harvest is the worst-judged economy that can be imagined.

Clean thoroughly by hoeing and scuffling all drilled and green crops. Earth-up potatoes, and pull by hand the tall weeds that may afterwards arise.

Lay lime and dung and composts on wheat fallows. Harrow the lime without delay, and cover the dung by ploughing, both operations—dunging and ploughing—going on together, or the one following the other as near as possible. Continue draining, the folding of sheep, and the soiling of cattle, as has been directed.

Keep the lambs always in forward condition by placing them on the best pastures. The drafted flock of last year will now be ready for the butcher; and ewes may be put with the ram for early lambs.

Sow on well-prepared grounds, in a warm, sheltered situation, the seeds of drum-head cabbage, kohl-rabi, savoys, and brocoli, for plants to be used next spring. Sow rye and winter vetches for early spring use. Apply dung for the vetches, or—what may be better on inferior lands and situations—summer-fallow the ground, using dung at the same time, thus adopting every profitable known means to secure so valuable a crop in the spring.

Burn ashes, and prepare all kinds of artificial manures for the drop-drill. Gather dung of all kinds, earths for composts, and vegetable growths for the manure pit. No person will ever do much in farming who does not apply manure with a constant, a lavish, and an unsparing hand.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Sow in the first week the main crop of next year's early cabbage, in the southern climates—a week earlier for colder and more northern localities. Water the drills before sowing, if the weather be dry.

"Winter spinach," twice. Choose mellow soil, moderately rich, like that after fresh-digged earliest potatoes. Nitrate of soda has been proved to be a most fertilizing dress, particularly in binding gritty loams—half-a-pound scattered a pole of 30¼ square yards, digged in, and the rows a yard apart, sown as the digging proceeds.

Sow also a sprinkling of horn carrot. Turnips: The early stone, or Dutch. Salads: Radish and lettuce early, and again after the second week. Cauliflower about the 21st day.

Dig-up early potatoes. Allow some of the medium-sized tubers of the ash-leaved kidney to be exposed, and "green" for seed store.

Transplant, at various times, according to their size, stout, well-formed plants of cabbage, brocoli, savoys, and Brussels sprouts. Incorporate a quantity of good manure with the soil, to which has been added sulphate of ammonia half-a-pound to the square pole. "Coleworts" for "greens" in the same manner, twelve inches apart. Celery, for the latest crop before the 21st. In dry weather water liberally. Never mutilate the plants by cutting the leaves. Earth-up former plantings timely and carefully. The spade may be used when the plants are strong, and have already been twice earthed. Propagate sweet-herbs by slips and cuttings. Take up garlic, shallots, and onions that are ripe.

Destroy weeds. Leave none to spread the evil by seeding; and now a most careful attention is everywhere required.

Cut vegetable-marrows and cucumbers as they come on, leaving none to become ripe. Be particular to gather French beans and runners, for if pods ripen, the bearing of eatable pods becomes checked at once. "Gather beans and have beans," says the old rule.

FRUIT DEPARTMENT.

Raspberries: Attend first to cut out the brown canes that have borne fruit; then take away slender supernumerary young shoots. Air and sun will thus act upon those six or seven good canes which are left to ripen. Burn the dry canes that are pruned out, and scatter the ashes over the raspberry-beds. This burning gives back to the earth as soon as possible the inorganic salts thus developed by fire. Make fresh plantations of strawberries.

"Spur-bearing trees," or espaliers, are regulated by snapping or cutting back the spurwood, or wandering breast, one-third of their length. The sap is thus checked and diverted to the lower buds, and not so fully and suddenly arrested as by amputation. In a few weeks the stumps are cut lower down, which removes any unsightly appearance.

Flower Garden.

Attend to the routine directions so often given and now re-pot and dress the auricula plants, and put off seedlings. At the end of the month transplant or introduce evergreens, particularly if the weather be moist.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

The weather, though somewhat changeable, having been forcing, the crops have made considerable progress towards maturity. In some of the most forward districts, the cutting of wheat and barley and the pulling of peas have been commenced, and small parcels of the two latter articles have been exhibited at Mark-lane. With regard to the probable yield of the wheat crop, we may observe that the growth cannot possibly exceed an average, because in most counties the ears are small compared with the two previous seasons. They may be quite as numerous as in the general run of years; but small ears seldom produce a heavy crop. Barley looks well; but the accounts respecting it vary considerably. On some soils, the growth will be large; but there are no indications of a crop exceeding last year. Oats are likely to turn out well; indeed, the general impression is that some lands will give an enormous quantity. The yield of beans will be large; whilst peas promise an unusually heavy crop, of excellent quality.

No restrictive measures having been taken by the Austrian or Prussian Governments in reference to the exports of produce, the arrivals of foreign wheat, barley, oats, and flour into the United Kingdom have continued on an extensive scale. Some additions have, therefore, been made to the stocks in warehouse, and the demand for wheat has fallen off, and a decline of from 4s. to 5s. per qr. from the highest point has taken place in the quotations. The tenacity with which the Directors of the Bank of England have clung to a 10 per cent. rate for money has, of course, induced buyers generally to operate with extreme caution. The transactions in barley, oats, beans, and peas have been very moderate, at a reduction in value of 1s. per qr. Flour, both English and foreign, has given way 2s. per 280 lbs.

The bulk of the hay crop has been secured in good condition. On the whole, it is a full average; yet prices are likely to rule high for some time. In the metropolis old meadow hay has sold at from £4 10s. to £6 6s., new do. £3 10s. to £5, old clover £5 to £7, new do. £4 to £5 5s., and straw £2 to £2 10s. per load. The stock of old hay is nearly exhausted.

New potatoes have come freely to hand in excellent condition. The crop is looking remarkably well in all quarters. As yet, it is wholly free from disease; whilst the growth promises to be the largest ever known.

The fruit crop is quite equal to last season. Apples are abundant in most of the cider districts.

We have to report great heaviness in the wool trade; but no further decline in the quotations. The approaching public sales of Colonial wool, at which about 130,000 bales will be offered, are looked forward to with much anxiety. We hope, however, that the Bank rate for money will be reduced to 8 per cent. prior to their commencement. If not, wool must rule lower in price, because we can hardly anticipate large transactions on the part of Continental buyers. The advance in the duties on wool and woollen goods in America of about 25 per cent. is calculated to keep prices in check here.

The hop bine has made considerable progress, and there is every reason to anticipate a large growth of hops. The trade is therefore heavy, at about nominal currencies.

In Scotland the crops are looking well. All kinds of produce have moved off slowly on lower terms.

The Irish markets have been scantily supplied with grain, for which the demand has been very inactive, at drooping prices.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that the supplies of beasts brought forward in the Metropolitan Market have been on the increase, and that most breeds have come to hand in somewhat improved condition, a full average business has been transacted, at what may be termed steady currencies. As a whole, they have not been quite equal to the previous month; but the fall has been almost wholly confined to middling and inferior breeds. The Norfolk "season" has continued somewhat longer than usual whilst the arrivals from Lincolnshire have been of full average weight, arising chiefly from the abundant supply of grass in the pastures. The imports from certain districts in Holland declared to be free from disease have been tolerably extensive; whilst we have received rather large numbers of well-made-up beasts from France, Jutland, Austria, and Prussia. Some of them have been purchased for West-end consumption, at from 5s. to 5s. 2d. per 8lbs.

The supplies of both English and foreign sheep have been tolerably extensive in numbers; but we have observed a slight falling-off in their general weight and condition. The German breeds, now extensively crossed with our Downs, have, however, improved considerably this year. The demand for most breeds has been moderately active, and the quotations have been steadily supported. The best Downs and half-breds have realized fully 6s. per 8lbs.

Scarcely any change has taken place in the value of lambs. The supply has been only moderate for the time of year, and the quotations have ranged from 6s. 8d. to 8s. per 8lbs.

The imports of foreign calves having been on an extensive scale, the veal trade has been heavy, on lower terms. English calves have come forward more freely than for several months past.

Prime small pigs have sold steadily, large hogs slowly, at about stationary prices. The top figure has been 5s. per 8lbs.

The rinderpest has greatly subsided in most parts of England; nevertheless, losses continue to be reported in several counties.

The total supplies of stock exhibited in the Metropolitan Market have been as under:

	Head.
Beasts	21,710
Sheep and Lambs	158,990
Calves	3,778
Pigs	2,420

Comparison of Supplies.

July.		Beasts.	Cows.	Sheep and Lambs.	Calves.
1865	...	26,010	580	149,960	5,757
1864	...	27,394	560	147,890	4,658
1863	...	24,070	525	169,870	3,822
1862	...	22,392	508	151,060	2,339
1861	...	19,740	560	156,140	3,532
1860	...	19,870	490	153,600	3,133
1859	...	19,600	476	166,632	3,609
1858	...	20,468	547	154,922	4,263
1857	...	19,558	530	142,280	3,830
1856	...	18,589	500	135,650	3,407
1855	...	16,702	535	140,470	2,747

The imports of foreign stock into London have been under:

	Head.
Beasts	13,177
Sheep	42,551
Lambs	6,893
Calves	4,282
Pigs	3,471
Total	70,374
Same time in 1865	77,430
„ 1864	47,046
„ 1863	51,552
„ 1862	38,272
„ 1861	37,262
„ 1860	44,658
„ 1859	30,847
„ 1858	31,192
„ 1857	26,968
„ 1856	30,537
„ 1855	22,642
„ 1854	22,242
„ 1853	38,795

comparison of the arrivals of English, Scotch, and Irish is as follows:

	July. 1864.	July. 1865.	July. 1866.
counties..................	6,900	5,900	2,800
k.	7,200	900	2,700
of England	2,300	2,320	2,400
....	751	894	149
....	280	200	193

COMPARISON OF PRICES.

	July, 1863. s. d.		s. d.		July, 1864. s. d.		s. d.	
Beef from	3	4 to	5	0	3	2 to	5	0
Mutton...............	3	8 to	5	0	3	6 to	5	4
Lamb	5	4 to	6	4	6	0 to	7	0
Veal..................	3	8 to	4	4	3	8 to	4	10
Pork	3	6 to	4	6	3	6 to	4	6

	July, 1865. s. d.		s. d.		July, 1866. s. d.		s. d.	
Beef from	4	0 to	5	4	3	6 to	5	4
Mutton...............	4	4 to	6	4	3	8 to	5	0
Lamb	6	0 to	7	4	6	8 to	8	0
Veal..................	4	2 to	5	2	4	0 to	5	8
Pork	3	8 to	4	10	4	0 to	5	0

out average supplies of meat have been on sale in New- and Leadenhall, and the trade has ruled steady, at about us rates. Beef from 3s. 4d. to 5s., mutton 3s. 6d. to d., lamb 6s. to 7s., veal 4s. to 5s. 6d., pork 4s. to 5s. 4d. lbs. by the carcase.

SOUTH LINCOLNSHIRE.

have most beautiful weather for bringing on the har- and preserving the potato crop. The season is all that be desired; the numerous showers of the past three r weeks have enhanced vegetation surprisingly, and drought of the past ten days has enabled us to get hay in splendid condition. Perhaps our mangold and crops would be benefited by a pleasant shower, they are all growing admirably. Almost the only thing have to "grumble about" is the unusual number of infesting our lands, and growing with astonishing ity; there never was such a crop of big and perplexing s; in some crops they have nearly obtained the mastery, ch so that they must "grow together till the harvest." crops of wheat are good, and ear filling well; we have a bulk of straw than usual, but quite plenty upon the aver- . The crops were all retarded in their growth in May, and quently the straw is of less length, and very few crops lodged. We anticipate a good yield of wheat of superior lity. Should the days be hot and sunny, we shall com- ce our wheat harvest by the second week in August. The of oats are more varied than the wheat crops, some ex- ingly good, others scarcely worth cutting; those late sown, ng to the drought in April and May, not having obtained ; the general crop, however, is nearly an average one, d the quality will be fine. We shall commence oat cutting the first week of August. The crops of barley are fine, and more abundant than usual. Should this season continue favourable, we shall be able to produce samples of good heavy malting barley, which is uncommon in this district; our soils generally produce a coarse, thick-skinned grain. The bean crop is a very full one, and fairly podded. We have as yet not suffered much from aphides, but they have commenced their periodical attacks. I hope as the season is so far advanced we shall not seriously suffer. The pea crop is a very good one, and still looks promising. The few hot days of the past week scorched up some late flowers, but the main crop had long set in pod, and as all danger from aphis is nearly over, I expect a capital crop. The potato crop, notwithstanding the great difficulties encountered in planting from drought, is now looking well, and, although backward, will prove an average crop, unless visited by the disease. We were alarmed for its fate during the continuance of the tremendous thunder showers in the latter part of June and early in July, and symptoms of disease were manifest; but all fears have subsided, and we are hoping to raise an excellent crop in the autumn. The moulding up has been a slow process, and much labour in horse-hoeing and ridge-harrowing has been found requisite to prepare the soil for this "moulding-up:" it has been so unusually hard and cloddy, considerable breadths here and there are still to be done. Flukes are slow growers in a queer season; rocks quite take the lead this year; regents are a good average plant; dalmayhos are the most forward in our field crops. Mangolds are growing fast, and for the most part are a full crop; the early sown look unusually good. Swedes are a very full and prolific plant, free from fly or beetle, and as they are not too early sown are likely to escape mildew. Turnips and coleseed are just coming into broad leaf, and look very promising, not a leaf touched by fly. Our grazing lands look roughly grazed owing to the short supply of cattle upon them in consequence of rinderpest. Sheep have done well. Lambs are about to be weaned; they have not come up so well as usual this summer, but their dams are nearly all fat, chiefly owing to the large supply of old mangolds given through the spring. —July 16th.

NORTH NORTHUMBERLAND.

At this advanced period of the season it is generally expected that some faint estimate of the forthcoming crops may be computed, which, like the last year, or rather for the two past seasons, is not easily arrived at. After the dense fall of snow and rain during the spring months (March, April, and up to the 13th of May) all ordinary farm routine was thrown into considerable arrear; hence spring corn was late in making a favourable braird, and since the period alluded to we for weeks were visited with harsh drying winds, crusting all the soil. Potatoes were hurriedly planted, and to less extent than formerly: the working of loamy strong soils for the green crop was tedious, and far from what we usually see in finish. Potatoes generally made a rise with a fair plant, but are now at a standstill for lack of moisture. Swedes and turnips on such soils (a very large breadth of our most productive lands) have made no regular braird. Sowing and re-sowing, with various stimulants, has been resorted to; a weak plant has appeared, after a passing light haze or shower, scorched up by a hot, burning sun, leaving hundreds of acres naked up to the time we write. Nor does such aspect appear local: travel where we may (except on moist, mossy, or sandy soil) the blank has the ascendancy: not a tenth of land seeded and expensively worked, manured, &c., is ready for the singling process. A large portion of clover and meadow is cut—a light hay crop, but got up in prime condition. Grazing and all pasture land very short of feed. The season so far has been altogether singular—intervals of tropical heat, with heavy thunder speate over the upland districts; extra loss by the electric fluid, followed by harsh, cold, easterly wind. What effect such phenomena may have on cereal produce during the earing and blooming we have not yet had the opportunity to estimate or examine; that the crop will be light in bulk is placed beyond doubt. Old straw and hay were never more generally worked up during the present century. How we may be prepared to face a stormy winter is in the hands of a gracious Providence. It may be, our excitement to increase the per-centage of cattle and sheep will receive a check. We can barely expect to raise and feed extra flocks on artificial beverage; nor would it be desirable to see the flesh provision markets in such a state of excitement as for the last three months; whilst the consumer has been paying fabulous prices, only a very *few* of the producers will have eked out a working profit, thankful that cattle and sheep have been free from plague or fatal disease. The restrictions and espionage iin removing or marketing live-stock have been irksome, often causing great loss by detention; we must, however, bear in mind that "prevention is safer than cure," and join in national thankfulness and gratitude to the Allwise Ruler of the universe that the plague has been so far stayed, and with hope that we may never see a case.—July 20.

BERKSHIRE.

After a wet winter and spring, we are now getting some hot forcing weather, which is acceptable to those who still have hay about, and there is a great quantity to be made. The continued damp and cold spring did not allow the wheat plant to throw out many tillers, but it did allow the red weed and other annuals to vegetate, and on light lands they have got the better of the wheat; and though the fields have presented a lively and gay appearance, the promise of a crop on such lands is not cheering. Also on some of the wet lands it is thin and weak, whilst on good holding well-farmed land it looks well, and promises to be rather an early harvest. The straw is scarcely so long as usual. Where the barley was got-in in good time, it is promising; but much of it is backward. Oats have done well, and are likely to be a good crop: some of the early sorts will be ready for reaping in a few days. Picking peas has commenced, and they are a fair crop. Beans have improved from the rains in June, and are kidded well. We have had heavy crops of clovers and artificial grasses; but much of it was cut, and took the rain: it has no doubt lost some of its best feeding properties; but where a little patience was exercised, and it was got thoroughly dry, some very useful fodder has been stacked. The meadow grass is generally a fair crop; indeed the only complaint is of the sainfoin, which was very short. The plants of mangold are not so regular as could be desired, and we fear we shall not have such an abundance as last season. The flies have been troublesome with the swedes, and many fields have been sown more than once. The continued wet in the spring has thrown field-work behind, and there are many acres yet to be sown with turnips. Cabbage is getting into favour: formerly we used to see patches of an acre or two at some farms: now we can see twenty acres together, and we believe it yields a much greater weight of food than anything else. Sheep are very fond of it, and thrive fast upon it. The price of wheat has risen; but the advance made at the beginning of the war in Germany is nearly lost, with a very slow demand. We do not expect prices will give way, as the present holders are not needy sellers and the prospect of the new crop is certainly not abundant. Good sweet fresh-thrashed oats are scarce and dear. There is but little doing in other corn. Beef and mutton are without much variation in price, and what little variation there is, is against the feeders. The demand for lamb has been good. We hear but little of the cattle-plague now, and we hope it will soon be sufficiently eradicated to allow markets and fairs to be held, and the usual business in cow stock to be carried on, as the inconvenience is very great. Store sheep, ewes, and lambs rule high in prices. Wool has been a slow trade, at about 1s. 3d. to 1s. 6d. per lb.; but latterly there has been more demand, at a slight advance. Old hay and straw are used up, and make high rates where any can be found. There has been a great demand for labourers, and much dissatisfaction amongst them, many leaving their homes to engage in other work than agriculture, and too often meeting with disappointments, and finding that though they may earn more money, their expenses are much greater, and that they are really not so well off. The old adage holds good with them—That "experience is never good till it is bought:" and some return wiser and sadder men. Still much discontent is shown; and if the difficulty of getting labourers at prices compatible with that produced from the land goes on as it has done, agriculture in the corn-growing districts will be at a discount.—July 20.

NORTH RIDING OF YORKSHIRE.

Taken retrospectively, for the last month the weather on the whole has, in this district, been favourable for farming pursuits. Between the 20th and 30th June we were favoured with abundance of rain, which was succeeded by a week of very hot forcing weather, under which crops of all kinds made rapid progress. This, again, was followed by another week of showery weather, and for the last ten days it has again been dry and warm, and very favourable alike for the growth of the root and grain crops and for securing the hay. Grass at one time in early summer gave promise of meagre crops, but with the above-mentioned intervals of alternate hot and moist weather it grew amazingly, and generally the crops have been very good, and in many instances above an average. The greater proportion is now made into hay, and secured in prime condition. On our light friable soils the turnip plant is excellent; the prospect of a full crop is immensely better than we have had for several years; but on the strong land and clays, especially in the Cleveland district, the reverse is the case, and on many a broad-acred field the seed, from insufficiency of moisture, has never brairded, or only partially so, and, as is usual in such cases, the struggling plants have succumbed to the ravages of the fly. On the clay soils wheat is thin, and under the most favourable circumstances can scarcely produce an average crop: on the dry friable loams it is better, and gives promise of about an average crop. Generally oats look bad; being thin on the ground, short in straw, with bad colour. Beans on the clays are also indifferent; the wet untoward spring retarded their sowing, and on many farms the young plants were ravaged with slugs, and they are consequently thin and backward. Barley generally is a full robust plant and maintains a healthy colour, and judging from present appearance will be the crop of the season. With a continuance of cold ungenial weather up to the middle of June the pastures were very short, and cattle did not do well, but since then grass has been abundant, and they have made progress very satisfactorily. As a rule, the number grazed is much less than in former years, and the weight of grass-fed beef will be short. Mutton has been selling at 9d. per lb. and a shade over for best quality, and beef from 10s. to 11s. per 14lbs. Rinderpest has nearly disappeared. Little is doing in wool, farmers generally being holders. The stocks of old wheat are getting very low.—July 20.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BANBURY FORTNIGHTLY FAIR.—There was a fair supply of sheep. Trade was moderately brisk, and mutton made from 5s. to 5s. 10d., and in a few instances a trifle more, the 8lbs.

BRISTOL GREAT COLT MARKET was by far the most meagre that has been witnessed there for many years past. A goodly number of saddle and harness horses and cart-horses were offered, but little disposition was shown on the part of dealers to buy. Prices ranged from £15 to £25 for cart colts.

BROMYARD FAIR.—There were no cattle, owing to the cattle plague. A few lambs offered brought 11d. per lb.; store sheep met with a dull sale. There were a plentiful supply of pigs, which were lower in price. Some useful horses were on offer, but little or no business was done.

FALKIRK FAIR.—Only a few animals were brought forward, and these, for the most part, were of a secondary and inferior class. Where sales were effected, the prices realised were stated to be similar to those current at recent horse-markets.

HORSHAM LAMB FAIR.—Business at the commencement of the fair was anything but lively, and the prices asked by the owners of lambs were thought by the purchasers to be too extravagant to admit of being done to any extent. Mr. Hawkins, of Burton Park, realized the highest price in the fair; but, as he had only about 40 or 50 lambs in the pen, his shepherd could not, according to established rules, hoist the blue ribbons, although no less than 44s. a head was paid for them. The highest price made for a pen of 100 was 41s., and these belonged to Mr. Emery, of Hurston, and this gave his shepherd the privilege of wearing the ribbons. Mr. King, of Westburton, made 42s. of some very nice lambs. There were between 9,000 and 10,000 sheep and lambs altogether in the fair.

INVERNESS GREAT SHEEP FAIR.—In some instances upwards of twenty per cent. of a falling-off took place. In the transactions were brisk, at somewhat advanced s. The following are some of the sales of sheep: Cheviot. Ardintoul ewes 35s. Achindnich ewes 34s. Achtercairn thers 40s. Auchindrean ewes 40s. Auchnaclearich ewes , clad. Benmore ewes 38s., three-year-old ditto 46s.; ewe gs 37s. 6d. Balmacarra ewes 36s. 6d. Balnakiel wethers , ewes 48s. Barragill ewes 30s. Ballaggan wethers 41s. riedale and Sanside ewes 40s. Borrery ewes 37s. Davoch- ewes 40s. Dornoch year-old wethers 31s., two-year-old 42s., Dramore Cheviot gimmers 38s. Ellinreach wethers . Erboll ewes 40s. Farraline wethers 40s. Forest Farm 35s. Gordonbush wethers 47s., ewes 40s., shott young 44s. Glenfintaig wethers 43s., ewes 36s., shotts 16s. ernish and Orbost ewes 34s. Blackfaced.—Auchindrean ers 40s. Ardochy ewes 24s. Achtercairn ewes 22s. 6d. gan ewes 20s., clad. Corriemoillie wethers 34s., ewes Corriemony wethers 36s. Dalbreck wethers 35s., ewes Dalchully wethers 35s. Drumore wethers 30s., ewes (clad), ditto 27s. (clad). Freeburn ewes 22s. Sales of s: Cheviot.—Aberchalder shotts 17s. 6d. Armadale rs 20s., tops and shotts. Ardintoul top wether 20s., 14s. 6d. Auchnaclearich shotts 15s. 9d. Balnakiel ewe 22s. Benmore ewe 26s. Berriedale and Sanside at market price. Cambusmore wether 22s. 6d. Com- ther 21s. Crasky wether 21s. Croichil wether 20s. ggan wether 23s. Culigran shotts 18s. Clythe 20s. Corriemony wether 21s. Downreay mid ewe Blackfaced.—Ardochy shotts 12s. Achtercairn 17s. 6d. Ballinluig ewe 22s., shotts 15s. Blargie 14s., clad. Booth ewe 20s. Corriemoillie shotts Creanachan wether and ewe, tops and shotts, 17s. Cor- h wether 15s. 9d. Half-breds.—Bedmadulhy 32s. Skibo 30s. Navity 30s. Moyhall greyfaced 24s. Mr. , Garguston, bought a lot of hoggs at 49s. Mr. Wil- Ross, Kinnahaird, sold cast ewes at 35s., lambs 27s. 3d. om 31s. Rehrin greyfaced 25s. Mr. Hendrie, Castle- , sold a lot of Southdown tups at £15.

WARK FAT STOCK MARKET.—The number of p was 681, and although buyers were numerous, they ap- d disinclined to give the prices asked by sellers. The equence was that a small amount of business was done, at uction of an average ½d. per lb., prices being 7½d. to 8d. s 30s. to 40s.

SWESTRY FORTNIGHTLY FAIR was tolerably well ied with sheep and pigs, a goodly number being disposed rivate sale, as well as the auctions. Sheep from 8d. to 9d. b. Pigs were a dull sale.

VERTON ANNUAL SHEEP AND LAMB FAIR.— supply was about equal to that of last year, being about or seven thousand short of an average. Business opened e morning by sellers asking very high prices, and an active e was soon established in ewes, at prices even higher than very high figures of Stockbridge (allowing for extra ity), and at a trifle less for lambs and wethers, the same parison being made. Inferior ewes fetched from 42s. to , second quality 50s. to 60s., prize ewes 62s. to 66s., and first prize pen of Mr. Anthony Budd, of Overton, the top- price of this or any other age—74s. each for the dred round, full-mouthed ewes, not for slaughter, but for ding! Mr. Budd sold a pen of draft two-tooth ewes, of fair average size and quality, at 60s. each; and Messrs. te, of Odiham, 300 of that age, at the same price, less a ing throw back on the whole, who also penned altogether tween five and six thousand sheep, which were all sold at y satisfactory prices. Lambs sold at 30s. to 51s. in the fair erally, but three or four pens of the prize lambs realised m 52s. to 56s. per head; wethers, 50s. to 70s. There was large number of fine rams and ram lambs, for which a good le was experienced; and the public sale of the Cotswold ps, the property of Beale Brown, Esq., conducted by Messrs. . Downs and F. D. Awbery, went off very satisfactorily at od prices, the whole having been disposed of to Hampshire own flockmasters, who are now using this breed so largely. he stock generally was of fine quality, and in better condition than usual; but the wether-lamb class in the show-ground was not so well represented as on some former occasions; nor were the ram and ram-lamb classes, as to numbers; but there were two splendid sheep exhibited in class 4, by Mr. Olding, of Ratfin Farm, Amesbury, Wilts, for both of which he received ps; and a pen of very fine ram lambs belonging to Mr. Bennett, of Chilmark, Wilts, carried off Lord Eversley's cup. The decisions of the judges, Messrs. Gerrish, Saunders (Dorset), and Sillence, gave universal satisfaction.

SALISBURY FORTNIGHTLY FAT SHEEP MARKET was largely supplied, the number penned being greater than for many months past. Some lambs of excellent quality were likewise shown, and made from 10d. to 1s. per lb. Mutton of good quality was in fair request, and, although previous quotations were sustained, prices were not so firm as of late. Inferior descriptions, however, changed hands at rather lower figures, and before the close of the market everything was cleared off. Mutton may be quoted at from 8d. to 9d. per lb.

SALISBURY SHEEP FAIR was very fairly supplied, upwards of 10,000 sheep being penned. Trade was brisk throughout, and a complete clearance was effected. Prices were about 1s. per head higher than at Stockbridge, and from 8s. to 10s. per head higher than last year. Ewes ranged from 45s. to 55s., prime lots as high as 60s., wethers from 50s. to 60s., prime lots as high as 63s., lambs from 25s. to 42s., prime lots as high as 44s. per head. There was a good competition for the various prizes. The judges were Mr. Sillence, Mr. John Strange, and Mr. Whitlock; and in one or two of the classes the animals were considered so equal, that there was some little difference of opinion between them as to the award. Ultimately, it was settled as follows:—1. A piece of plate of the value of £5, by M. H. Marsh, Esq., M.P., for the best pen of improved Hampshire Down ram lambs, Mr. Bennett, Chilmark; highly commended, A. Morrison, Esq. 2. A piece of plate of the value of £3, by the members of the Corporation of Salisbury, for the second best pen, Mr. Edmund Olding, Ratfin. 3. A piece of plate of the value of £5, by Lord Henry Thynne, M.P., for the best pen of 80 wether lambs, Mr. Joseph Higgins, Wishford. 4. A piece of plate of the value of £2, by Giles Loder, Esq., for the second best pen of wether lambs, Mr. William Barnett, Broadchalk. 5. A piece of plate of the value of £5, by Edward Hamilton, Esq., M.P., for the best pen of 80 wether sheep from any flock, Mr. F. Sidford, Bishopstone. 6. A piece of plate of the value of £5, by the members of the Corporation, for the best pen of 80 breeding ewes, good on tooth, Mr. E. Waters, Stratford. 7. A piece of plate of the value of £5 (late Alderman Smith's prize), to the largest penner, Mr. Thatcher, Stoford. 8. A piece of plate of the value of £5, by the members of the Corporation, for the best Hampshire Down ram of any age, Mr. Edmund Olding, Ratfin; commended, Mr. Child, Lower Wyke Farm, Andover.

SEAMER FAIR.—The horse fair formed the chief feature, the number of animals being large, and buyers were also numerous. So far as regarded the first class of horses—hunters and top hacks—they had all been picked up privately at good rates, but farmers were free sellers of all others. There was a considerable attendance of buyers from the London market, and all cab, 'bus, carriage, and riding horses went up well, at good prices. The demand for troop and army horses was also very active, there being many buyers, but only few animals of the class shown. In all other sorts the show was considerably over the demand, trade being poor and lifeless.

ST. BOSWELL'S LAMB FAIR, July 18.—Sales began to be made at a very early hour, but trade never approached anything like activity. Indeed, it seemed as if the market grew stiffer as the day progressed, and such holders as had made up their minds to sell, found some concession necessary before bargains could be made. The top lots were picked up before eight o'clock at somewhat similar prices to those obtained last year; but generally there was a reduction in value to the extent of 1s. a head, and in various cases the fall from last year's prices amounted to 2s. 6d. and 3s.

ST. SAIR'S FAIR, (ABERDEENSHIRE.)—The selling price of mutton may be quoted from 7d. to 7½d. per lb. In consequence of the horse market being in a manner overstocked, trade was somewhat stiff; draught horses, however, were in request, and in general commanded high prices. The number of sales effected was fewer than might have been looked for, considering the season of the year and the general character of the market. Holders of good animals were unwilling to part with them, as the idea is prevalent that trade in horses, though somewhat slack for the last few years, is reviving considerably, and will continue.

SETTLE FORTNIGHTLY FAIR.—There was a decided improvement, both as regards supply and demand. The number of sheep and lambs brought into the fair was much larger than last fortnight, and there being a quick demand all was cleared off in good time, at prices fully as dear.

SHEFFIELD FAT STOCK.—A good show of fat beasts and sheep. The hot weather caused a rather heavy market, at a reduction of about 6d. per stone on beef, and ½d. per lb. on mutton. Number of cattle 207, sheep 666, and lambs 72. Beef 8s. 6d. to 9s. 6d. per stone; mutton, 8d. to 9d., lamb 10d. to 10½d. per lb.

SHERBORNE FAIR was supplied with about 2,000 sheep, which is a great falling off in comparison with former fairs. Prices ruled very high, and the rates of the late fairs was well maintained, with a good business doing. The best things in the fair—a lot of fine fat ewes, sent in by Mr. H. G. Andrews—fetched 57s. a-head, and a good lot 49s. The best lambs brought 36s.; and 34s. was turned away for one or two lots. As usual, there was a good deal doing in wool, and at 17d. and 18d. many shearings went to the brokers.

STOBBS FAIR (Dundee).—The show of horses was unusually large. No cattle or sheep were on the ground. Very few good draught horses were in the market, but there was a pretty large number of second-class animals. Altogether, the market ruled extremely dull, very few of the horses changing owners. Harness horses brought from £20 to £45, good draught horses from £20 to £30, and second-class horses from £15 to £20.

WELSHPOOL FAIR.—The supply of sheep was rather limited, and they sold readily with lambs at a decided advance in prices. There was a rather large show of horses and ponies of inferior description. A few pretty good carriage horses were sold by auction and by private contract at from £30 to £45 each. Most of the other horses sold at very reduced prices. Pigs were decidedly lower. Carters were sold at from 16s. to 20s.

IRISH FAIRS.—Kells (Meath): Stock was a full average, and the attendance of buyers in excess of the supply. The beef department presented some excellent lots, the top price being 75s. per cwt.; second class sold from 60s. to 68s., and the few coarser beasts disposed of were worth fully 52s. per cwt. In springers the demand was not so good as at the late fair of Drogheda, and the prices for best varied from £15 to £18 10s.; inferior £12 10s. upwards. The supply of store cattle was not up to the mark, except bullocks, a very nice selection of which were shown, and quickly bought up by English and North of Ireland dealers. Two-year-olds varied from £9 to £13, according to merit; year-and-a-half-olds from £8 to £9; yearlings from £5 to £8 per head. Heifers were exceedingly scarce. In the sheep department there was a slight advance in prices. We had but a small supply of bacon pigs, but fully equal to the demand. The rates for bacon were 57s. 6d. to 60s., sinking offal, and for pork from 60s. to 63s. per cwt. Store pigs and bonhams were plentiful, the former fetching from 43s. to 50s. each, and the latter from 15s. to 20s. each. Dundalk: There was a large quantity of stock, including two and three years old cattle, for which there was not a brisk demand, and prices must be quoted 10 per cent. less than the previous fair. The sheep and lamb show was unusually large, and a fair demand existed for both, chiefly by English buyers. Mutton was bought at about 7d. per lb., lamb a shade higher. Callan was well supplied with horned cattle, sheep, and pigs. Prime beef realized about 66s. per cwt.; second class from 54s. to 60s. per cwt. Mutton might be quoted at 8½d. per lb. There was a brisk demand for milching cows—say, from £12 10s. to £18; two years old heifers, £9 to £13 10s.; yearlings, £6 10s. to £8. In the store cattle department business was carried on very actively, notwithstanding the bad reports, which no one believes. Two-year-old bullocks fetched from £8 to £11 10s., and yearlings £3 5s. to £5 10s. Sheep were picked up very quickly at £2 to £3 10s. Hoggets, 38s. 6d. to 44s. each, and lambs £1 2s. 6d. to £1 10s. Bacon pigs went at the rate of about 52s. per cwt. Stores and suckers cheap, the former 30s. to 45s. each, and the latter 17s. to 32s. per couple. Carlow: Fat stock were quickly bought at high prices, beef bringing £3 5s. per cwt. For stores generally the demand was dull. Mr. Hugh Cullen bought a lot of three-year-old heifers, at £13 8s. each; and Mr. Robert Farrell sold a lot of heifers to Mr. Oliver, at £15 each. Two-year-olds brought from £8 to £10, and yearlings, according to quality, £6 10s. to £8. Springers and milch cows in good request, and those offered, which were few, realized from £16 to £20 each. Sheep were very high; prime mutton, 7½d. to 8½d., and stores £2 2s. to £2 5s. each. Lambs met a ready sale, at from £1 10s. to £1 18s. each. The pig fair was small, and an advance of 2s. to 3s. per cwt. on the price of pork, which sold at about 57s.; stores scarce and fetched good prices—say, from 50s. to 60s., and slips proportionately high. Kells (Kilkenny): Three years old bullocks, in forward condition, brought £12 to £16; 2 years old £7 to £10; heifers (scarce), 1 year old, £5 to £9; yearling bullocks, £4 to £7; strippers, £10 to £12; fat beasts, £10 to £20 each; sheep, 45s. to 65s.; lambs, 20s. to 32s. 6d.; store pigs, 30s. to 50s.; bonhams, 16s. to 24s. each; some even went at 52s. per couple. Rathkeale: Fat cows for the knife averaged from £17 to £22 each; fat bullocks sold at a like average; 3 years old heifers, from £15 to £17 each. Mr. Hayes bought some prime lots: 2 years old heifers went at from £9 10s. to £12 each, according to quality; yearlings, for which the demand was active, sold at from £6 to £8 10s.; milch cows were scarce at £19 and £20 each. Sheep, of which the supply was good, sold at from £2 7s. 6d. to £2 12s. each, and lambs at from £1 10s. to £1 15s. each; weaning calves £2 10s. to £3. The demand for pigs was most pressing, and a decline of from 3s. to 4s. per cwt. was experienced in bacon, 56s. being the highest quotation.

DEVIZES WOOL FAIR.—There was a short supply—about fifty lots, while some score or more were represented by sample, and, probably at least as many as shown, were sold by word of mouth, without being represented at all. The attendance of buyers was large, and a good deal of competition resulted from the efforts to secure the best lots. The first lot was sold by Mr. Bennett, of Oare, for 42s. per tod, all ewes—a price which probably surprised everybody, himself included: but which was afterwards eclipsed by other lots, mixed lots making 40s. to 43s., and in one or two cases, 43s. 6d. per tod. Mr. H. Church, of Hillcott, "topped" the market, selling a very fine white lot of tegs at 45s. per tod. Mr. T. Neate realized 44s. 4d. (or 1s. 9d. per lb.) for his tegs. Most of the lots were cleared off before the close of the day, though, as usual, some parties "hung fire," and could not be brought to deal until after dinner. The average price for mixed wools was 42s. 3d. per tod, being an advance of at least 3d. per lb. on Newbury fair, and 2½d. per lb. on Hungerford fair, held only three weeks ago.

DONCASTER WOOL MARKET, (Saturday last.)—There was the largest supply of wool brought forward this season, being upwards of 800 sheets. It met a ready sale, at a further advance of 6d. to 1s. per stone, Lincolnshire parcels realizing 50s. to 53s. per tod, according to quality and proportion of hogg fleeces. Ewes and wethers 22s. 6d. to 23s. 6d., mixed parcels 24s. 6d. to 26s. 6d., all hoggs 27s. to 28s. 6d. per 14½lbs.

DORCHESTER (OXFORD) WOOL FAIR.—There was a very large pitch of wool, and high prices were realized. One superior lot of half-bred tegs of Mr. William Greenwood's fetched as much as 51s., the purchaser being Mr. Shilson, of Banbury. Downs fetched about 40s., and half-bred teg and ewe mixed 45s.

HAWICK WOOL FAIR.—A few clips of half-bred and blackfaced wools were sold about the prices of recent markets early in the afternoon, but scarcely a bargain was struck for Cheviot before five o'clock; and, though a portion changed hands after that hour, the price for Cheviot wool would be from 5s. to 7s. below last year's rates.

HEREFORD WOOL TRADE.—At our market on Wednesday last the price averaged from 18½d. to 19½d. per lb.; but at Ross Fair, on Thursday, at which there was a good deal on offer, prices averaged somewhat higher—viz., from 19d. to 20½d. per lb. At these prices Mr. Varley (through his agent, Mr. Cooke) was a very extensive purchaser.

INVERNESS WOOL FAIR.—Mr. Robertshaw, of Akeil, and Robertshaw, Bradford, bought several clips of blackfaced laid at 13s., white Cheviot hogg and ewe at 32s., laid Cheviot 24s. Mr. Maclean, Millburn, Inverness, sold his laid Cheviot ewe wool at 24s., greyfaced and half-bred at 38s. Laggan Farm: Blackfaced laid 17s. Mr. Morrison, Inchmarlo, bought several clips of whitewashed Cheviot at from 24s. to 26s.; a clip of blackfaced white and cross mixed, washed, from Mr. Anderson, Lochdhu, at 20s.; and a clip of white Cheviot, washed, from Mr. Mackintosh, Bareven, at 30s. The Shield-ing, Gairloch: Cheviot laid was sold to Mr. F. H. Macleod, Glasgow, at 29s.

KELSO WOOL FAIR.—The quotations of the clips sold ran as follows: All hoggs sold at from 43s. to 45s., three hoggs to one ewe at 43s. to 44s., half-hogg and half-ewe at from 41s. to 43s., and ewe from 37s. to 40s. We subjoin a number of the sales which took place: A clip of three ewes to one hogg was sold at 42s., a clip of half-ewe and half-hogg sold at 42s. 6d.; a clip half-ewe and half-hogg, from near Earlston, was sold at 43s. Mr. Smith, Leaderfoot, sold a clip of half-hogg and half-ewe at 43s.—a luck-penny returned. Mr. Suttcliffe bought all ewe at 40s. and 39s., half-ewe and half-hogg at 42s. 6d., and all hogg at 44s. Mr. Buckham, Kersmains, old half-ewe and half-hogg at 44s.—a luck-penny returned. Mr. Thomson, of Mainhill, sold his clip, three ewes to one hogg, at 41s. 6d. A large clip of two hoggs for one ewe was sold at 43s. Mr. Stark, Mellendean, sold his clip of more ewe than hogg at 42s. Mr. Glass, Hendersyde, sold his clip of all hogg at 45s. Mr. Suttcliffe bought all ewe from Todrig, near Coldstream, for 39s. Mr. Thomas Haig, Kirkhill, sold his clip of more hogg than ewe at 40s. A clip of all Cheviot ewe was sold at 36s. An extensive dealer bought all hogg at 44s., and all ewe at 39s.

LEWES WOOL FAIR, (Friday.)—The general tone of the market will be gleaned from the prices appended. The chair was taken by George Darby, Esq. The following sales were effected after dinner:—Mr. T. Ellman offered 380 ewes, tegs 250, and 100 fatting sheep, at 1s. 8d. They were purchased by Mr. Prior of Chichester. Mr. Cane announced he had sold his wool 950 ewes and 350 tegs to Mr. Breach at 19½d. Mr. Verrall, of Swanborough, sold 1,081 ewes, 402 tegs, and 18 rams, to Mr. Lucas, at 1s. 8d. Mr. Arkcoll, it was stated, had sold his wool, but he declined to satisfy the curiosity of the meeting as to price, on the ground that he had promised the buyer not to so. Mr. T. Cooper announced that he had sold his wool to Mr. Breach at 19½d. Mr. T. Saxby announced that he had sold 1,050 fleeces to Mr. Breach at 1s. 7½d. Mr. F. Scarce, Ditchley, sold 500 ewes and 200 tegs to Mr. Adams at 20d. Mr. Guy, of Willingdon, annouced that he had sold his wool at 20d. to Mr. Adams. Mr. Cowley said he had sold 600 fleeces to Mr. Martin at 1s. 7½d. Mr. Colgate said he had sold Mr. Brand's wool at 1s. 7½d., to Mr. Adams. Mr. Ellis sold his wool to Mr. Prior, 900 ewes and 300 tegs, and about 20 rams, at 1s. 8d. Mr. Hart said he had sold his wool at 20d., to Mr. Martin. Mr. Farncombe sold 285 ewes, 110 tegs, and five rams to Mr. Lucas at 20d. Mr. Tappen, of Westham, sold his wool to Mr. Adams at 1s. 8d. Mr. Charles Waters said he had sold his own wool and that of his brother at 1s. 8d. to Mr. Adams. Mr. Starnes offered 260 ewes, 101 tegs, and 3 rams, at 1s. 8½d.; sold at 20¼d. Mr. Holmden sold his wool, 500 ewes and 200 tegs, at 1s. 8d. Mr. Nye sold his wool, and that of the Rev. J. Harrison at 1s. 7d. Mr. Joseph Gorringe, of Eastdean, and Mr. Osborn sold their wool at 1s. 7d., to Mr. Prior. Mr. R. R. Verrall sold 800 ewes and 300 tegs to Mr. Lucas, at 1s. 7½d. Mr. Tuppen sold his wool at 19¾d. to Mr. Prior. Mr. Joseph Gorringe sold 500 ewes and 200 tegs, at 19½d. to Mr. Adams. Mr. Breach said had bought the Duke of Richmond's wool at 20½d. Mr. Brown, of Friston, sold his wool, 700 fleeces, at 20d. Mr. Hillman, of Stoneham, sold 850 fleeces to Mr. Lucas, at 20¼d. Mr. E. Beard sold his wool at 19d., to Mr. Prior. Mr. Hodson sold his wool at 20d. to Mr. Breach. It will thus be seen that the prices ranged from 3d. to 4d. per lb. more than at Chichester.

ST. BOSWELLS WOOL FAIR.—There was a pretty numerous attendance of both buyers and sellers, and a considerable amount of business was done, though not nearly so much as last year. Generally, at this season of the year, the wool trade is in full swing; but the Continental war has thrown business into a disordered state, and the result has been a great reduction in prices. Mostly all kinds to-day sold at from 8s. to 9s. 6d. less than last year; but it was stated that prices were, if anything, a shade better than at Dunse and Cornhill. All-hog sold at from 45s. to 45s. 6d., and in one instance 46s. was said to have been paid, half-and-half at from 42s. to 43s. 6d., all-ewe from 40s. to 41s., Cheviot ewe 34s. 9d., Cheviot ewe and hogg 35s., three hogg to one ewe 44s., and three ewe to one hogg 42s.

ST. SAIRS WOOL FAIR.—In the wool market, prices were lower than they have been for several years. The quantity shown being comparatively limited, a general clearance was effected at something like the following rates: Half-bred white wool 2s. 9d. per lb., black English wool (fine) 3s. 3d. per lb., inferior do. 2s. 9d. to 3s. per lb.

GLASGOW WOOL MARKET, (Saturday last.)—There has been a little more business done during the past week, and spinners are inquiring for laid Cheviots and black-faced laid. Some transactions are reported in these classes, but the business is still strickly limited to actual requirements. Both holders and buyers wait for a settlement of political questions before doing very much.—*F. H. McLeod.*

NEW YORK WOOL MARKET, June 30.—Domestic fleeces at 45 cents to 50 cents for native and quarter Merinoes, 50 cents to 55½ cents for half and three-quarters ditto, 60 cents to 65 cents for full-blood ditto; 65 cents to 70 cents for Saxony fleeeces; 30 cents to 40 cents for No. 1 pulled, 50 cents to 60 cents for superfine ditto, and 60 cents to 65 cents for extra ditto; 20 cents to 27 cents for common unwashed California, 27 cents to 37 cents for fine ditto, and 15 cents to 23 cents for Texas.

BRESLAU WOOL MARKET, July 19.—Though transactions are continuing still on a very moderate scale, there is a very confident feeling prevailing among wool dealers, who are unwilling to sell unless at enhanced rates. Some purchases have been made of the finer descriptions of Polish, Posen, and Silesian clothing wools at from 75 to 85 thalers per cwt., which represents an increase of 6 to 10 per cent. above June fair quotations. The chief purchasers were Netherland and English commissioners, as well as country manufacturers. In the whole there have been sold about 800 cwts., whereas fresh conveyances arose to about 2,000 cwts.—GUNSBURG BROTHERS.

ALGOA BAY MONTHLY WOOL, SKIN, &c., REPORT.—PORT ELIZABETH, June 8.—We are now in the height of the wool season, and large quantities are being received daily from the country districts. The clip this year in the north-eastern district and the Free State is an unusually heavy one, and of superior quality. The local wool market has been very animated, though the excitement caused by the report of the London March sales has somewhat abated. The scarcity of tonnage, the report that the alteration of the American tariff had passed the Legislature, and a falling rate of exchange have made the market weaker during the last fortnight, and brought prices a shade lower. Unsatisfactory news from America, and the advice of lower prices at the London May sales just received, will doubtless cause a further reduction. Present prices may be quoted as follows: Fine fleece-washed 1s. 2½d. to 1s. 3½d., medium 1s. 1d. to 1s. 2d., seedy and faulty 11d. to 1s., superior scoured snow-wnite 1s. 8d. to 1s. 10d., hand-washed superior 1s. 3d. to 1s. 5d., medium to good ditto 1s. 1d. to 1s. 3d., inferior seedy 9½d. to 11d., fine unwashed superior light and clean 8d. to 8½d., good average 7½d. to 7¾d., medium 7d. to 7½d., inferior and seedy 5½d. to 6d., coarse unwashed 4½d. to 5d. per lb. The following are the clearances for the month: To London, per Arthur Pardew 896 bales, per Annie Duthie 1,036 bales, per Icon 1,158 bales, per Gem of the Nith 1,279 bales, and per steamship Briton 935 bales. To Boston, per Silvery Wave 535 bales, and per Nicoline 300 bales. To New York, per Saxon 1,355 bales; and to Sandy Hook, for orders, per Armenia 697 bales. Total, 9,061 bales (2,989,505lbs.) Of 2,650 bales offered at our produce sales, 1,310 bales were withdrawn, leaving bonâ fide sales 1,340 bales.—MESSRS. A. C. STEWART & Co.

ENGLISH WOOL MARKET.

CITY, MONDAY, July 23.—We have no new feature to notice in this market. The transactions both for home use and export have been on a limited scale, at the late decline in the quotations. The supply of wool on offer is very moderate, but more than equal to the demand, owing chiefly to the high range in the price of money in the discount market.

CURRENT PRICES OF ENGLISH WOOL.		s.	d.		s.	d.
FLEECES—Southdown hoggets............	per lb.	1	4½	to	1	5½
Half-bred ditto	,,	1	6		1	7
Kent fleeces........................	,,	1	7		1	8
Southdown ewes and wethers	,,	1	4		1	5
Leicester ditto	,,	1	5		1	7
SORTS—Clothing	,,	1	4		1	8½
Combing	,,	1	3½		1	9½

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

Notwithstanding the unpromising aspect of May, with its cutting and unusual frosts, which gave the idea of a very late gathering, the weeks of harvest seem likely to arrive at about the usual period. The close of June brought us the first pledge of real summer, and though a part of July was boisterous and broken, there has been such a liberal allowance of intense sunshine, on the whole, that the sickle, as well as the scythe, has commenced its work, and another fortnight will bring us into the thick of it. The wheat crop is not, however, expected to turn out an abundant one, but rather under an average. There are, indeed, localities—such as the well-drained fens and other good soils, where the winter rains did not lodge and chill the roots—which have good promise; but the heavy lands send poor reports. In France it is even less favourably reported, and the first samples from the south are complained of, the grain having been too hastily ripened by the torrid temperature lately experienced. Other countries have not given final reports, Northern Europe not yet being ready. But as the war in Germany and Italy so recently commenced seems likely to rapidly close in favour of Prussia and Italy, our fears as to the great destruction of the growing crops may be withdrawn, and it is only as regards the abstraction of labour for military purposes that the gatherings are likely seriously to suffer. The sudden and decisive victories of Prussia, attributed to the needle gun, unfortunately exhibit the sudden and serious decline in prices experienced in wheat, though at its highest the average never reached over 55s. 10d. Every market in June was upon the ascending scale, excepting the first; but July has another tale to tell, and it is one of incessant reductions, say to the extent of fully 8s. per qr., so that the whole advance from the lowest point has about been lost. The state of the money market prevented any speculators stepping forward to arrest the downward tendency; but, as we have receded so far, there is a proportionate chance of a reaction, for the chapter of accidents is always in favour of low prices. Barley is well spoken of, as a whole, though it varies. Oats also have been favourably reported; but peas are said to be the heaviest crop on the ground. Beans vary, being partly fine and partly defective, but seem to excel last year's produce as a whole. But our cattle plague has not left us, and whatever crops may yet be on the ground they have to be gathered. The hay, which was threatened at first, is now reckoned to be a fair produce. The following were the prices quoted in the several foreign places named: The best white wheat in Paris (64lbs. per bush.) is 52s. per qr., red 50s.; red at Antwerp, 54s.; at Liege, 51s. 8d.; mixed Polish at Amsterdam, 57s.; the best red at Hambro', 48s. 6d. Cologne quotations were 48s. per qr.; Porrentruy, in Switzerland, 50s. Fine high-mixed was extremely scarce at Dantsic, and held at 52s.; red at Stettin, 44s.; at Rostock, 46s.; Holstein qualities, 45s.; at Galatz the low quality of the principalities was quoted 31s. 6d. per qr. Odessa Ghirka has been selling here afloat at 47s. per qr.; Spanish white at 53s. Spring wheat at Montreal, 50s. 8d. per 480lbs.; at New York, 55s. 2d. per 480lbs.

The first Monday in Mark Lane opened on moderate English supplies of wheat, but there was a liberal foreign arrival. There was a very scanty show of samples during the morning from Kent and Essex; but the forcing weather experienced for a week previous made a very dull market, and millers insisted on a reduction of fully 2s.; which only being partially complied with, very little business was done. Holders of foreign would willingly have conceded 1s. per qr., for the sake of business; but the concession was not enough to meet the views of buyers, and so very few sales were reported. With but few cargoes at the ports of call, prices remained nominally unchanged. The earlier country markets showed little change in the course of prices, but Liverpool was down 3d. per cental. Hull, Boston, Newark, Newmarket, Newcastle-upon-Tyne, and several other towns were 1s. to 2s. per qr. down. Stockton-on-Tees and some other places were 3s. per qr. cheaper, and Norwich was still lower. At Edinburgh the wheat trade was down 1s. to 2s. per qr.; Dundee, Glasgow, and other Scotch towns made similar reports. Cork noted a decline of 6d. per brl., and Dublin was 6d. to 1s. per brl. lower.

On the second Monday there was an unusually small English supply, but again plenty of foreign. The show of samples through the morning was about the smallest of the season from Essex and Kent; but with a set-in of genuine Midsummer weather, and news of a probably speedy peace in Germany, there was no selling without a reduction of 1s. to 2s. beyond the real rates of the previous Monday, making the fortnight's decline fully 3s. to 4s. Foreign was also down 2s. per qr. without much progress being made, and the floating trade was about suspended; but to sell, it would have been necessary to take 1s. to 2s. per qr. less money. The country this week was quite as much affected by the extraordinary victories of Prussia and the very forcing weather, and there seemed a sudden and general agreement on the part of farmers to take a reduction of 3s. to 4s. per qr. on the previous rates; but Guildford supported prices, while Halesworth accepted a decline of 4s. to 5s. per qr. Liverpool was down 6d. to 8d. per cental for the week. Edinburgh and Glasgow noted a further reduction of 1s. to 2s. per qr., as well as Dundee. At Dublin the decline on wheat was 6d. per brl. Cork noted a reduction of 6d. to 1s. per brl.

On the third Monday there were short English, but plentiful foreign supplies; but a small show was made during the morning by the fresh samples from Kent and Essex, yet the forcing heat and pacific tendency of the foreign news made it a standstill market, and to sell would have required another reduction of 2s. per qr. But little was also doing in foreign, though a few sales of selected Russian were made at the previous prices. With very few cargoes off the coast, there was no change of value noted. The heavy decline already submitted to in the country, as the consequence of a rapid approach to harvest, seems nearly to have wrought a general determination among farmers not to make further concessions, but abide the result of the gatherings, the stock of old wheat being everywhere admitted to be very short; indeed, at Liverpool an advance of 2d. per cental was quoted, a speedy peace being by no means certain; but here and there, as at Fakenham and Devizes, 1s. per qr. less money was taken. Edinburgh was 1s. per qr. higher for wheat, and Glasgow without change. There was so little native wheat exhibited at Dublin that holders of foreign were very firm, and able to sell at fully previous rates.

On the fourth Monday there was a moderate quantity of native wheat reported; but the foreign imports almost doubled any previous returns during the year, amounting to over 54,000 qrs., as the consequence of late orders during the time of advance. It mattered little, therefore, that the fresh samples from Kent and Essex during the morning were limited. The market was in suspense, and to sell it was necessary to make another concession of 2s. to 3s. per qr., or say 4s. to 5s. for the fortnight. In foreign also there was quite a pause to business, though holders would readily have accepted a reduction of 2s. per qr. Floating cargoes were offered, though few in number, at a reduction of 1s. per qr. Many of the country markets submitted this week to a decline of 2s. to 3s. per qr., but some resisted any further reduction.

The imports into London for four weeks were 10,960 qrs. English, 136,940 qrs. foreign, against 21,912 qrs. English, and 73,399 qrs. foreign for the same time in 1865. The exports from London for the month were 1,060 qrs. wheat, and 218 cwts. flour. The foreign imports into the Kingdom for four weeks ending July 21 were 1,946,201 cwts. wheat, and 291,450 cwts. flour, against 1,771,556 cwts. wheat, and 236,826 cwts. flour in 1865. The general averages commenced at 48s. 5d., and closed at 55s. 10d.: those of London began at 54s., and closed at 55s. 6d. per qr.

The flour trade has followed that of wheat, and prices of Norfolks have receded fully 4s. per sack in the course of the month, falling from 40s. to 36s., with a very difficult sale at the reduction. French have been reduced in a like ratio, and barrels, notwithstanding their scarcity, have fallen fully 2s. per sack. Town rates have not yet been reduced, the top price still standing at 50s. per sack; but this rate is not likely to be maintained with a fall in wheat amounting from the lowest point to about 10s. per qr. The imports into London for four weeks were 56,431 sacks country-made, and 6,655 sacks 15 brls. foreign, against 56,580 sacks country-made, and 1,746 sacks 6,847 brls. for the same period in 1865.

The barley trade, which at the commencement of the month was firm, in consequence of the shortness of stocks has gradually given way with increased foreign supplies and the finest possible weather, more especially as the crop is well reported. The decline as yet has amounted to only about 2s. per qr.; but as this grain is relatively dearer than maize, there is probability of a further reduction. Low Danube sorts have lately been selling at 26s. per qr. The imports into London for four weeks have been 793 qrs. British, and 38,820 qrs. foreign, against 485 qrs. British, and 44,134 qrs. foreign for the same period in 1865.

In consequence of continued foreign imports upon a weekly increase till the last week reached to 71,000 qrs., the oat trade has been steadily declining, and the reduction has reached to 2s. or 3s. per qr. for inferior and Russian sorts, while the fine heavy sweet qualities have scarcely given way to half that extent. The opinion given, as to the shortness of last year's crop being justified as to its deficiency, has led to these free foreign imports; but as there can be no stock of old oats in the country, it is very probable we may have some reaction in Russian sorts, as the recent importers lose money heavily, and foreign stores are much reduced. Sweden seems the country destined to provide us with the finest quality of corn, there having been some recent arrivals of Poland from thence, which were of such exceptionally fine quality (weighing 45lbs. per bushel) that they brought 39s. at the last market. The imports for four weeks into London were 1,555 qrs. English, 300 qrs. Scotch, 1,090 qrs. Irish, 191,437 qrs. foreign; against 1,161 qrs. English, 728 qrs. Scotch, 3,770 qrs. Irish, 246,148 qrs. foreign in 1865.

The malt trade through the month has been quiet, and a decline of 1s. to 2s. was noted on the last market.

There has been but little doing in beans, partly from the extremely high prices at which they have been held, and partly as the effect of the warm weather. Prices have therefore declined about 1s. to 2s. per qr.; but not much change can be anticipated before the new crop begins to appear. Some new beans from Zaffi, in Morocco, very dry, and fit for splitting, have already arrived, and brought 46s. in the middle of the month, which is fully 10s. above the average of seasons for such quality. The imports into London for four weeks were 1,014 qrs. English, 1,409 qrs. foreign; against 1,009 qrs. English, 3,647 qrs. foreign, in 1865.

In peas also very little has been passing, the season being against any very active inquiry, though English supplies have been extremely scanty. Arrivals from Canada have been fair in quantity and quality, and prices have reduced about 1s. to 2s. per qr.

The linseed supply has been on a very diminished scale, and therefore prices have been firm; but so many substitutes have been found in consequence of the high rates that the demand has considerably lessened. Cakes have, however, gone off well, prices being more moderate relatively.

There has been nothing stirring in the seed trade. New trefoil has appeared of fair quality; but prices have not yet been settled. New rape-

seed has been on the market some weeks, and a large reduction from the first-made prices has taken place. Fair seed could be bought at the last market at 56s. per qr., with higher prices in proportion for extra quality.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR IN MARK LANE.

	Shillings per Quarter.	
WHEAT, Essex and Kent, white ....new...	43 to	55
,, ,, ,, red .... ,, ...	42	49
Norfolk, Lincoln, and Yorkshire, red..................	42	49
BARLEY ....30 to 34..........Chevalier	38	42
Grinding..............29 31..........Distilling	32	37
MALT, Essex, Norfolk, and Suffolk, new..................	59	68
Kingston, Ware, and town-made, new	59	66
Brown..	52	56
RYE...	26	28
OATS, English, feed 20 to 26..............Potato...........	25	31
Scotch, feed ....20 27..............Potato...........	25	31
Irish, feed, white 19 22..............Fine...............	23	27
Ditto, black ....18 21..............Potato...........	23	28
BEANS, Mazagan ...41 43..............Ticks............	41	43
Harrow ....43 47..............Pigeon	46	50
PEAS, white, boilers..39 42 Maple 40 to 42 Grey, new	36	37
FLOUR, per sack of 280lbs., Town, Households........	47	50
Country, on shore 36 to 37 ,, ...	39	43
Norfolk and Suffolk, on shore	35	36

FOREIGN GRAIN.

	Shillings per Quarter.	
WHEAT, Dantzic, mixed ......53 to 55........old, extra	58 to	61
Königsberg ....50 55........extra.....	56	57
Rostock ....51 55........fine	56	57
Silesian, red......................48 52........white	51	55
Pomera., Meckberg., and Uckermrk. ...red old...	50	53
Russian, hard, 43 to 47...St. Petersburg and Riga	45	47
Danish and Holstein, red	45	46
French, none..............Rhine and Belgium.........	50	53
American, white 00, red winter 50 to 56, spring	00	00
BARLEY, grinding 26 to 28....distilling and malting	35	39
OATS, Dutch, brewing and Polands 20 to 28.......feed	18	23
Danish and Swedish, feed 20 to 25.... Stralsund...	20	25
Russian, Riga 20 to 22...Arch. 20 to 22....P'sburg	22	25
TARES, Spring, per qr. ...... small 38 42... large ...	45	50
BEANS, Friesland and Holstein	37	42
Königsberg ....40 to 42...Egyptian, none	00	00
PEAS, feeding and maple...37 40...fine boilers	37	40
INDIAN CORN, white......30 32...yellow	28	30
FLOUR, per sack, French..37 40...Spanish, p. sack	37	40
American, per brl.......24 26...extra and d'ble.	28	30

BRITISH SEEDS.

Mustard, per bush., white..............................	8s. to 12s.
Canary, per qr..	45s. 52s.
Cloverseed, red...	00s. 00s.
Coriander, per cwt.......................................	00s. 00s.
Tares, winter, new, per bushel	0s. 0d. 0s. 0d.
Trefoil..	00s. 00s.
Ryegrass, per qr.	00s. 00s.
Linseed, per qr., sowing 00s. to 00s., crushing	60s. 68s.
Rapeseed, per qr...	64s. 68s.
Linseed Cakes, per ton.........................	£9 10s. to £10 10s.
Rape Cake, per ton..............................	£5 10s. to £6 0s.

FOREIGN SEEDS.

Coriander, per cwt.......................................	16s. to 20s.
Cloverseed, red 45s. to 56s., white..............	60s. 80s.
Trefoil..	18s. 23s.
Ryegrass, per qr.	25s. 26s.
Hempseed, small —s. per qr., Dutch............	00s. 40s.
Linseed, per qr., Baltic 58s. to 60s...Bombay	68s. 00s.
Linseed Cakes, per ton.........................	£9 10s. to £11 0s.
Rape Cake, per ton..............................	£5 0s. to £6 0s.
Rapeseed, Dutch..	00s. 00s.
Carraway ,, ...	00s. 00s.

IMPERIAL AVERAGES

For the week ended July 14, 1866.

Wheat	30,932	qrs.	55s. 10d.
Barley	385	,,	35s. 1d.
Oats	1,344	,,	27s. 7d.

COMPARATIVE AVERAGES.

	WHEAT.			BARLEY.			OATS.		
Years.	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
1862...	39,857 ...	57	0	600 ...	31	9	2,153 ...	24	1
1863...	42,755 ...	46	10	662 ...	30	10	1,379 ...	23	6
1864...	60,378 ...	41	9	940 ...	27	8	2,670 ...	21	10
1865...	50,048 ...	43	1	1,186 ...	27	3	1,721 ...	22	5
1866...	30,932 ...	55	10	385 ...	35	1	1,344 ...	27	7

AVERAGES

For the last Six Weeks:	Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.
June 9, 1866..................	47	1	35	9	25	8
June 16, 1866..................	47	4	36	0	25	9
June 23, 1866..................	48	5	34	4	26	7
June 30, 1866..................	51	0	34	0	26	0
July 7, 1866..................	54	6	35	5	27	7
July 14, 1866..................	55	10	35	1	27	7
Aggregate Average	50	9	35	1	26	6
Averages last year	43	1	27	3	22	5

HOP MARKETS.

BOROUGH, Monday, July 23.—Our markets continues heavy, but prices have not materially altered, and quotations must still be considered nominal. Reports from the plantations are on the whole of a more favourable character, the healthy bine is making fair progress, while the infected portions are cleaning and have nearly thrown off the vermin; but the thin spindly shoots now being put forth can do but little good. Accounts from West Sussex, Mid and West Kent are hardly so encouraging, fresh fly having appeared in some of the grounds, and the late fogs and cold nights have not proved favourable to the growth of the bine; East Kent, Farnham, and the country districts are progressing well and promise a fair yield. Reports from Belgium, Bavaria, Baden, Alsace and the French districts are more favourable; but the improvement is not yet sufficiently manifest to increase materially the prospects of an average crop. New York advices to the 11th instant speak very discouragingly of the hop prospects, many of the old yards show nothing but poles, while others exhibit a very light growth of bine; few yards present the appearance of the old-fashioned luxuriant growth. Vermin have not appeared yet to any alarming extent, and the late copious showers have had the effect of cleansing the plant from honey-dew, which had previously prevailed to some extent. Experienced hop-growers estimate the yield at about half an average, and of good fair quality.

Mid and East Kent...	105s., 140s., 180s.
Weald of Kent ...	100s., 120s., 140s.
Farnhams & Country	100s., 125s., 160s.
Sussex	90s., 110s., 140s.
Bavarians	130s., 147s., 170s.
Belgians	100s., 112s., 125s.
Yearlings	95s., 110s., 130s.

PRICES of BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—	s.	s.	CHEESE, per cwt.—	s.	s.
Friesland	104 to	106	Cheshire	72 to	84
Jersey..................	90	100	Dble. Gloucester......	74	78
Dorset..................	114	120	Cheddar..................	76	84
Carlow..................	—	—	American	66	74
Waterford	—	—	HAMS: York............	90	100
Cork.....................	—	—	Cumberland............	90	100
Limerick...............	—	—	Irish	90	100
Sligo.....................	—	—	BACON:—		
Fresh, per doz., 10s. 0d. to 14s. 0d.			Wiltshire	72	78
			Irish, green	68	72

ENGLISH BUTTER MARKET.

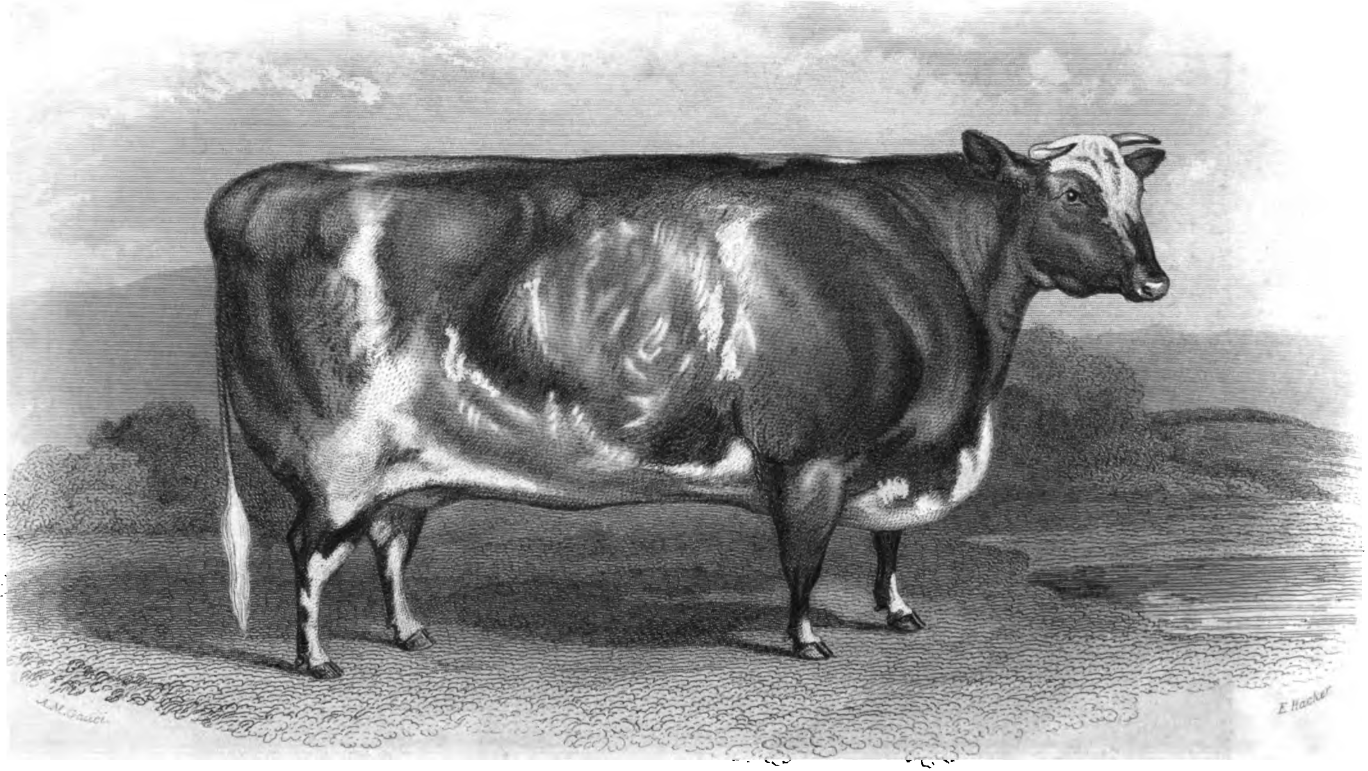
LONDON, Monday, July 23.—The price of Butter is firm, but trade is not active.

Dorset, fine...............	118s. to 120s. per cwt.
Devon	106s. to 110s. ,,
Fresh	12s. to 14s. per dozen lbs.

CORK BUTTER EXCHANGE, (Saturday last.)—The supplies average about 1,900 firkins daily. Owing to the high rate of money and the heat of the weather the demand has not been very brisk, although nearly all the arrivals are bought up at the quotations. Prices have consequently fallen. Since Monday, firsts fell from 113s. to 111s., seconds from 110s. to 107s., thirds remained at 100s., and fourths fell from 94s. to 92s. Mild-cured arrivals average 60 firkins daily. It quotes to-day from 107s. to 118s.

NEWGATE AND LEADENHALL POULTRY MARKETS.—Geese 4s. to 6s., goslings 4s. to 6s., ducks 1s. 6d. to 3s., ducklings 2s. to 3s., tame rabbits 1s. to 1s. 6d., pigeons 6d. to 10d. each; Surrey fowls 9s. to 12s., ditto chickens 6s. to 10s., barn-door fowls 3s. to 7s. 6d. per couple. English eggs 7s. 6d. to 8s., French ditto 6s. 6d. to 7s. per 100; fresh butter 1s. to 1s. 2d. per lb.

Printed by Rogerson and Tuxford, 246 Strand, London, W.C



Corinne

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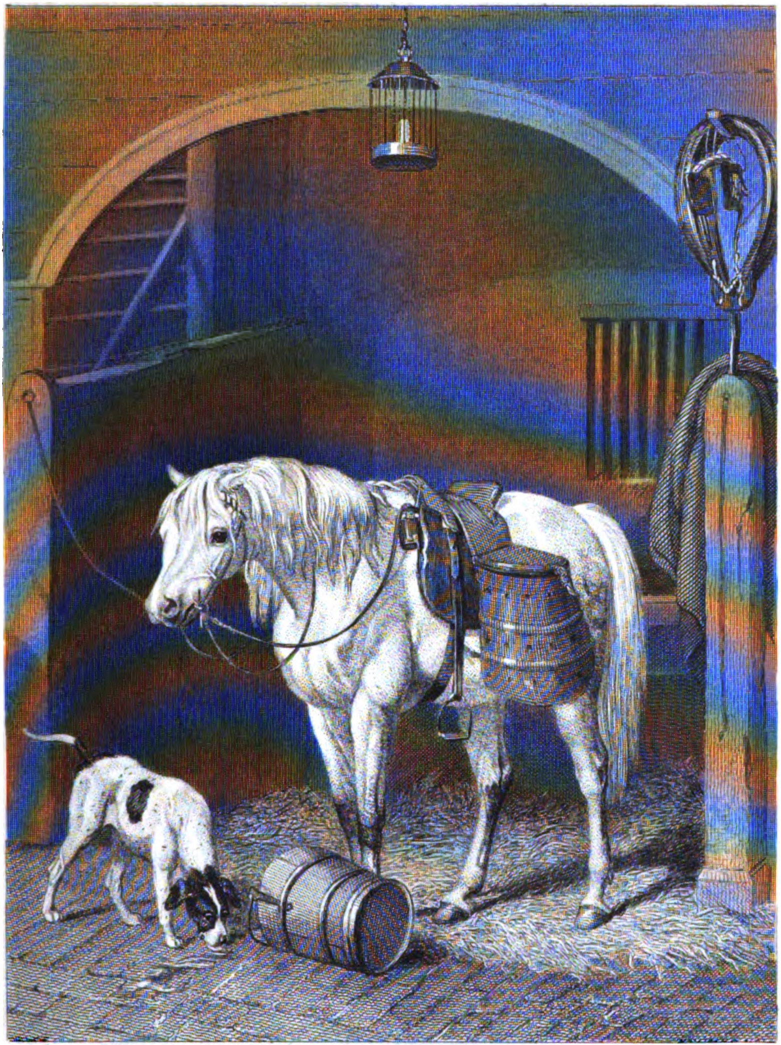
London Published by Rogerson & Tuxford 246 Strand 1856



A. Cooper R.A. E. Hacker.

On the Rein

London, Published by Rogerson & Tuxford, 246 Strand 1856

PLATE V.

CORINNE; A PRIZE SHORTHORN COW.

THE PROPERTY OF MR. JOHN WOOD, OF STANWICK PARK, DARLINGTON.

Corinne, a roan cow, bred by Mr. Wood, and calved on July 4th, 1860, is by Cardigan (12556), out of Carmine by Prince Arthur (13497), her dam Carnation by Newton, (2367) — Cowslip by Young Magog (2247), — Duchess by Margrave (1263), — Premium by Sir Charles (593), — by Sir Dimple (594), — by St. Albans (1412), — by Layton (366), — by Charge's Grey Bull (872), — by Brown's Red Bull (97).

Cardigan, a roan bull, bred by Mr. Richard Booth, was calved on February 8th, 1854, and got by Crown Prince (10087) out of Caroline by Fitz-Leonard (7010), her dam Christiana by Buckingham (3239). Cardigan was also the sire of Lord Adolphus, Mr. Wood's first prize bull at Battersea.

Carmine, the dam of Corinne, and also bred by Mr. Wood, was calved on April 21st, 1854.

In 1863, at the Stockton Meeting of the Yorkshire Agricultural Society, Corinne made her first appearance in public, when she took the first prize for three-year-old heifers in-calf or in-milk, but where it struck us she was rather overdone in the way of condition. In the autumn of the same year she also took the first prize at Bernard Castle for cows of any age.

In 1864 Corinne won the first prize for cows at the Middlesborough Meeting of the Cleveland Society, and the first prize in a similar class at the Howden Meeting of the Yorkshire Society, and when we spoke to her merits as "a very sweet lengthy cow, at all points the best" of her class. These were the only two occasions on which she was exhibited during the year, though she had been prepared for the Royal Meeting at Newcastle-upon-Tyne, but she calved the night previous to the opening of the show.

In 1865, however, at the Plymouth Meeting of the Royal Agricultural Society, Corinne took the first prize of £20 for shorthorn cows, beating Mr. Stratton's Diadem, Mr. Sharpe's Elegant, Lady Pigot's Perfume, Mr. Stratton's Maid of Honour, Messrs. Hosken's Moss Rose, and Mr. Tennant's Frederick's Farewell, all of which were distinguished either by prizes or commendations, and when we said "the shorthorns were fairly saved by the cow and heifer classes, with some very good specimens amongst the dowagers. The first of these, Mr. Wood's Corinne, has been very judiciously reduced since we saw her in Yorkshire, and now looks sweeter and handsomer than ever." During last year she also took first prizes at Bridlington, Driffield, Durham, and Morpeth, beating at the last-named of these meetings Sir Matthew Ridley's Royal Newcastle prize cow; and also taking the silver cup given by the late Mr. R. Booth for the best animal on the ground.

Corinne has further proved her worth in the herd, as she has had three calves, the last of which, a bull calf now about five months, should with luck be as good as his mother.

The Stanwick herd at present consists of just a dozen females, cows, heifers, and heifer-calves; of two young bulls, and five bull-calves, all full of promise, and very healthy. Lord Albert, one of the late Mr. R. Booth's bulls, is now being used at Stanwick.

PLATE VI.

ON THE REIN.

The grey pony is warranted—to do anything but speak; and to stand on the rein for three hours together, until the keeper has settled the poacher's business, or the terms for the next day in the covers. The grey is of course "the property of the artist," who has a kind of patent in this way, that, we are happy to say, he never abuses. Abraham Cooper's greys are as well matched as were Sir Henry Peyton's, and the oftener he puts them on parade, the better they go—with the public.

THE GAME FED BY A TENANT FARMER.

BY CUTHBERT W. JOHNSON, F.R.S.

The preservation of game, although attended with great general advantage to the community, has, unfortunately, sundry attendant evils. These may be classed under two heads: first, an abundance of game renders it essential to their greater enjoyment that the land on which they are preserved should be kept partially or entirely out of cultivation; or, secondly, if the land is well cultivated, to the more or less injury to the crops it produces.

As regards the first of these heads, we find in all periods that the owners of game were too often desirous of keeping their land in the state that nature left it. Philip Pusey, in his graphic way, long since sketched some of these injurious effects. As he well remarked (*Jour. Roy. Ag. Soc.*, vol. iv., p. 309), "On the Exmoor wastes, you find the heath growing knee-high, a proof that the land has strength; you frequently find tall ferns mixing their bright green or yellow fans with these purple bushes, yet fern is an unfailing sign that land has depth as well as goodness, and wherever ferns grow, unless, indeed, the elevation is too great, wheat might be reaped. But in that neighbourhood there is a wonderful indifference in the owners to the use of their land. These moors are divided into large sheep-walks for the neighbouring farms. Sometimes you find a large piece of the best land enclosed with a high fence, and you hope that the owner is about to begin to till his freehold; on the contrary, the object is to keep out the only sign of farming—the sheep—and to preserve the best of the land (for where the land is best the covert is highest) an undisturbed realm for the black-cock. Every black-cock killed by an owner of these moors has cost more, I am convinced, than a full-fed ox; but it is nothing new that sporting should impede farming. The new forest was made for the deer, and Henry I. afforested 70,000 acres of fens; 'doing,' says Dugdale, for the pleasure of hunting, much harm to the commonwealth.' In later times, when it was proposed to lay the fens of Lincolnshire dry, the fen-men obstinately opposed the scheme, and their main argument (as I found in a curious old pamphlet) was the destruction which would fall on the wild ducks and other water-fowl. In the last generation rabbits resisted the long-woolled sheep, and now grouse and black-cocks are the main impediments to the extension of cultivation."

Some years afterwards Pusey again alluded to the injury done to the farmer by four-footed game (*ibid*, vol. ii., p. 405). He remarked forcibly and truly that the rabbit is now admitted to be indefensible: he will clear by the covert-side three or four acres of barley, which never comes into straw: he is self-convicted. But the hare will travel out two miles by night for his supper; and yet, though less palpable, the hare's bite is not the less mischievous. Even he will feed down, in winter or spring, acres of wheat; which comes to a crop indeed, but is apt to mildew, and is perhaps thus rendered worse by a quarter per acre. Swedes, too, are gnawed and exposed to frost; so that farmers sometimes store their swedes for protection, not against the weather, but the nightly visitor. I have known farmers give up the growth of winter-vetches altogether, where hares have been swarming. The amount of loss may be measured, in this case, by the fact of the farmer having been obliged, as I know, to send his flock twenty miles off, in spring, to water-meadows, for the use of which he paid £60. It is asked indeed, sometimes, how many hares eat as much as a sheep? But the question is wrongly put. Sheep do not roam at will, and help themselves from the growing crop. A hog does not eat many potatoes, but who could bear a loose hog in a kitchen garden? A good farmer rated to me the injury on his land from hares at 5s. per acre.

The amount of injury done by game appears, indeed, to be the main element in this important question. It is idle to suppose that with the present and increasing demand, game can be banished from the farmer's crops; for, notwithstanding the enormous supplies poured into the market from our own islands, a very large and increasing importation of game now exists. The following little table gives the declared value of the game and poultry imported in the year 1865, and from what countries (the declared value of these was about £131,000 in 1864):—

Norway	£2,056
Holland	9,993
Belgium	70,653
France	64,532
Other countries	1,408
	£148,642

Norway chiefly sends us white hares and ptarmigan; Belgium, Ostend rabbits and other game; France, poultry.

If, then, it resolves itself into a question of fair compensation between the tenant and the owner of the game, it becomes important to inquire into the real damage inflicted upon the farmer by a head of game. Now, some years since the question was carefully examined by a Committee of the House of Commons, of which, amongst others, Mr. Manners Sutton, Mr. Bright, and Lord George Bentinck, were members. It is to be remembered that it is commonly in the sudden increase of game, *after* a tenant has taken a lease, that the loss the most severely arises. Now, before that Committee a witness appeared, who was an instance of the hardship of a rapid and large increase of game, such as that to which we have just referred. This was Mr. William Bates, of Stagenhoe, near Hitchin, in Hertfordshire, who on his first entry upon a farm he formerly held found neither hares nor rabbits, and had the clear understanding that it was not intended to preserve them. He said, "I took the farm for an agreement for a 14 years' lease; the lease was not signed, but the agreement for a lease was signed; but when I had been there for about a year and a-half, it was said that the Duke of Wellington came down on a visit, and admired the situation very much for game, and inquired whether it was preserved or not. Then it was that I was told by different persons that the game was to be preserved. Keepers were put on, and the game was preserved to a considerable extent—to an extent beyond anything that I ever saw in my life. As to the increase within a certain time, where there is a large quantity of woods situated as those were (it was a Bedfordshire farm), and they are well looked after, it is astonishing how quickly they get a head of game." In his opinion hares did the greatest damage. He added, "If I had a farm of 800 acres, I would as soon keep one sheep as I would two hares. The calculation I make is this, that if I had 800 acres of sheep-land, I consider that I ought to keep, for the good cultivation of that land, one sheep to an acre, and that sheep ought to pay me £1 with the wool and the carcase of the sheep; I would take the keep of one sheep, and I would not keep hares if I could make 10s. a-piece for them for their keep for one year." It will be well to note in this research, as Mr. Pusey remarked, that it is not the mere weight of food consumed by the animal that must be taken into the account; we have to regard the destruction they commit on the growing crop, on plants which they bite, and only partially consume. This was well described by another Hertfordshire farmer, Mr. J. S. Nowlson, of St. Alban's, who remarked to the committee: "As the grain gets towards perfection, the hares and rabbits will cut it off about six inches to a foot above the ground; they cut what we called recks in the wheat. I can speak to one instance, where I was called in to view it just before harvest, where some of the furrows were literally cut for, I should say, from a foot to a foot and a-half on each side; that is, a yard, including both sides of the furrows, was literally cut off by the hares and rabbits, so that the straw lay as old stubble in the middle of the lands. Where they had not made a thoroughfare, there the wheat was good. It is common for the hares to bite the joint of the stalk, which is supposed to contain a quantity of saccharine matter; we always consider that the hare takes off the first joint, which is about 9 to 15 inches out off the ground, according to the size of the straw." The ravages of the hare upon certain green crops is equally mischievous. The mangold and the kohl-rabi, for instance, roots of which this animal is peculiarly fond, are bitten by them in the most restless and persevering manner. It is true that they do not consume the *entire* root, but they bite out a mouthful, and then pass on to other roots. "The turnips, too, are injured," added Mr. Nowlson, "by being bitten by the hares and rabbits; and, consequently, if there comes frost, the frost will destroy them. After the skin is broken, the frost will take hold of the bulb, and it will decay. I have seen an instance of this; in fact I can speak of one field of turnips that were sold at £3 10s. per acre, in consequence of being so injured by the bite of the hares and rabbits, which otherwise, within two months afterwards, would have realised £8. My general impression is, that three hares will consume and damage more than will maintain one sheep." If we examine the evidence on the same question, from another district, we find a Suffolk farmer, Mr. S. Lock, of Barton Bendish, giving similar testimony: "I have formed an opinion," he says, "as to how many hares do as much injury as a sheep. Considering that with the sheep you get some manure, and that you can fold them, and make them eat all that you give them, while the hares destroy a great deal more than they eat, and roam over the farm, that damage will vary very much; in 1844, certainly every three hares on my farm did me more injury than the amount of the keep of a sheep—that was a dry season. In a wet season, probably I could keep half-a-dozen hares for the same injury. Another Suffolk farmer, Mr. J. W. Cooper, of Ingham, after remarking that "a hare, having an unlimited range and a humorous appetite, will do double the damage if adrift than the cost would be if it was kept in confinement," he added, as the result of his observations and some experiments, at which he had been present, "If the sheep and hares were confined within *pens*, I consider that four or five hares would consume as much food as one sheep." The damage which they cause on the richer soils is apparently less. Mr. W. E. Hobson, of Kettleby Thorpe, in Lincolnshire, considered that six hares would eat and destroy as much as one large Leicester sheep." Mr. W. Morris, of Ricklands, near Louth, thought from four to five; and that they did most damage in winter, because they do such great injury to the turnips. Some Scotch farmers gave similar testimony. Mr. James Landale, of Woodbank, in Fifeshire, said, "There is no certain rule to go by, but the general opinion is that from four to five hares roaming through the whole crop are equal to one sheep." The evidence which was produced to rebut the evidence of these and many other excellent practical farmers was of a rather discordant character. The Hon. G. C. Berkeley laboured ingeniously and zealously in behalf of the hares and rabbits. He urged upon the committee very fairly that it is true the hare is always at large; but against that fact it is but right to place another. The hares, as well as the rabbits, live half their lives in the landlord's woods; they feed upon wild herbage, dry bents, dry leaves of all kinds, wild parsley, sow thistle, and the young shoots of heather and gorse. When seen in wheat or barley they are not always feeding upon the crop, but very frequently on the small wild grass that springs between the stalks of the corn, as I have frequently proved by shooting the hare or rabbit while at feed, and examining the contents of the mouth. The hare will also cross through and leave whole crops untouched, to reach and feed in distant heaths and downs, to feed on the short sweet herbage of the latter, of which she is fonder than of any other. The hare, as well as the rabbit, frequently feeds in the deer park, and in the grassy glades, rides, and paths of the landlord's woods, as well as on the stack of barley, loose barley, and swede turnips placed in the cover purposely for the game. In the fall of the year, the hare also feeds to a considerable extent on acorns. The hare and rabbit, therefore, are frequently in a position to do no damage whatever. "Taking all the facts into consideration, and viewing them side by side, the nearest conclusion that can be arrived at by calculation (added Mr. Berkeley) is, that in amount of consumption 55 hares must be equal to 1 sheep." This was the lowest estimate of the damage done by the hares produced before the Game Committee by any one of the hare's many sporting friends. Mr. Henry Villebois, of Marham, thought that "a sheep would eat as much as 50 hares;" Lord Malmesbury "as 40 hares;" but Mr. Stephen Hooper, gamekeeper to Sir Edward Butler, of Chilworth, thought "that one sheep would not eat more than 20 hares." Mr. R. Brierly, of Nottingham, calculated "more than 16." The general evidence, then, was by far the strongest as to the very considerable damage done to the farmer's crops by hares and rabbits; and although we are quite disposed to agree with the committee in their report that, under the present law, "the tenant has at all times the power to secure the game to himself, or reject the tenancy if the proprietor insists on a reservation being made of the game in his (the proprietor's) favour," yet still we are equally well aware (knowing that this independent course on the part of a proposing tenant is only really practicable in the small minority of cases) that it would much promote an equitable adjustment, and the consequent permanent comfort of both the contracting parties, if the real damage caused by game was more generally understood, and allowed for by the landowner. It is to the want of a proper and well-founded calculation on these points, and a fair observance of the agreement, based on such a clear understanding, that all the discomforts caused by the ravages of game are to be generally attributed. It is, indeed, evident that when the landlord has bargained for the keeping, and the tenant has covenanted to keep, a certain amount of game of any kind, that then so long as the bargain *is fairly kept on both sides*, no one to whom we address ourselves has any cause for complaint. But then, as we know very well, these bargains are not commonly made with the requisite degree of consideration by the parties to the lease—and from the nature of the case the damage arising from game can be only equitably settled by subsequent valuations.

In reviewing the general mass of evidence produced before the same committee, it is very evident that the denunciation of the pheasants by every one was much more qualified than that of the hares. The very first witness — Mr. W. Bates, a farmer from near Hitchin—placed this pretty correctly when he said, "I do not object to partridges: pheasants do considerable damage at one season of the year, but not equal to hares." The pheasant, too, destroys a considerable portion of insect vermin, which prey upon the farmer's crops; but too much must not be made of this fact, for, as Mr. W. Sewell, a farmer of Caldecote, near Swaffham, observed, "I think that pheasants and partridges are, as well as rooks, of great service in destroying wireworms, because they feed a good deal upon insects; but I think that the rooks will do more towards destroying wireworm than pheasants will. The pheasant does not roam far enough into the fields to do much good in destroying the insects; they keep on the sides of the covers." The period when the pheasants do the most injury, said Mr. W. E. Hobson, of Kettleby, near Brigg, is after the corn is sown. "Where they are strictly preserved, and numerous," he added, "they are at that period very injurious to corn, but I do not think they are so injurious to growing crops." An account was produced by the Hon. H. W. Wilson of the number of pheasants and other game annually *killed* on an estate of about 4,000 acres, at Didlington, in Norfolk, during several years. It was as follows:—

Year.	Partridges.	Pheasants.	Hares.	Rabbits.
1837-8	577	556	585	—
1838-9	1221	609	1035	419
1839-40	1091	711	973	318
1840-1	1021	1104	1256	548
1841-2	1439	756	1046	365
1842-3	958	852	1454	568
1843-4	922	861	1314	722
1844-5	502	826	1319	427

He placed the value of a game-preserved estate upon a fair footing when he added, "We sell the game, we give a great deal away; but what is not wanted for our friends and myself we invariably sell, and that meets with as ready a market as any other description of food which we produce upon the farm." "I regard the game," he continued, "in every point of view as a lucrative species of private property; it adds considerably to the value of all our light-land properties." His mode of agreeing about the game in the letting a farm affords an instance of the openness and honourable bearing which commonly mark the English country gentleman, but gives an excellent illustration of the indefinite kind of game agreements to which we have already alluded. He told the committee, "Game farms are usually under-let, or let at rents to compensate the tenants. I never knew an instance to the contrary. I never had a valuer, or a farmer, who came to take a farm (and I have done all that business myself), that has not said, 'What is to be done about game? What sort and quantity of game are we to have?' And my answer has always been, 'I let the farm with ample allowance for the game upon it; we will take care that it does not do you more damage than usual; but the game we insist upon; in fact, we consider it a great portion of the value of our estate.'" For the owners of preserves considerable stress was justly laid upon the amount of the insects consumed by game. The late Colonel Challoner, of Portnall, in Berkshire, placed this very fairly. He said, "From experience I have found that you never can rear young game in a shut-up place of any description, no matter how large; nor can you ever rear young game with success upon the same spot two years following: they always require to be taken to a different *locale*, and my belief is that it is in consequence of the insects and seeds, and matters of that kind, that are in the soil, which are quite necessary for the rearing of young game." He added, in another place, "We believe that game, in certain lands, look more for insects and the wireworm than they do for corn. You will see young pheasants in a wheat field, either newly-sown wheat, or wheat partially up, and you will find their crops full of anything but the seed of wheat. I do not mean to say that they will not pluck off the green blades, but very partially; but I never saw or heard of an instance of pheasants being found with any quantity of corn in their crops, but I confine (he concluded) my evidence entirely to the wheat crop." On this head, too, Mr. Henry Villebois, of Marham, in Norfolk, spoke out with all the open warmth of a true sportsman. He told the committee that he was well aware that pheasants and partridges feed upon insects to a great extent; that they destroyed the wireworm, and consequently did a great deal of good to the farmer's crops, so much so that he deemed the good done in this way by the pheasants and partridges to a great extent afforded compensation for the harm done by a moderate number of hares; yet he spoke with the honest doubts of one who wished the case to be fairly stated on both sides, for he also remarked, in reply to a question as to the possibility of growing good crops in conjunction with a thick preservation of game, "I think that all depends upon the seasons. Two years ago it was a tremendous breeding season for hares; there were twice the number of hares, two years ago, that there were ten years before. Then last year was a very bad year again; but taking one year with another, I do not think that game does that mischief that people tell you it does; that is my opinion of it. I think the opinion of the Norfolk farmers is, that they like partridges and pheasants upon their property, that they would rather have them; it is hares that they object to, but I never heard a Norfolk farmer object to pheasants and partridges." The evidence, then, on all sides was, as we before remarked, much more strongly directed against the preservation of hares and rabbits, than against the existence of an equally large proportion of pheasants, since in their case there are many qualifying circumstances—they aid the farmer in the destruction of the predatory insects; they injure his crops at only one period of the year; at that time it is true he has to support them, but then his burthen ceases with the season; it does not continue, as in the case of hares and rabbits.

It would then surely simplify the question, and remove all sources of uncertainty (the parent of litigation) if a covenant was introduced into the farmer's lease, to the effect that the damage done to his crops by game should be allowed him, as a deduction from his rent, and this might be easily and fairly determined every year, in need, by any competent valuer. It is difficult to see any other way of getting out of the difficulty. In feudal days, the serf had to keep a horse, or a cow, or perform some work for his landlord, but the *number* of the animals was stated in his grant; it was never supposed, even in those iron days, that a horse or a cow intended a drove. If then, as we all know, the amount of game on a farm varies so very materially, in different seasons, and under different arrangements over which the landlord has the sole control, it does only seem fair that the allowance to the tenant should vary with the extent of the burden he has to bear.

ON HARVESTING CORN.

This being one of the most important works on the farm, has received much attention in every land and every climate; the variation of climate having had more to do in deciding the course pursued than any other consideration. If we commence our survey with the northern and western parts of the United Kingdom, where the greatest difficulties have to be encountered in consequence of the wet and changeable seasons there prevalent, we find the wary Scotchman and the impetuous Irish under the same atmospheric influences adopting the same modes of saving their corn.

In the rainy districts of the West of Scotland the plan of "rickling," or hand field-stacking, obtains partly in consequence of the prevailing custom of returning to tillage after the land has for three or four years been laid down to pasture. Here the first corn crop, which is oats, has generally a large quantity of grass amongst it, to save which in good condition is of much importance; they take care therefore to cut low, either by scythe or hook, while dry, and to bind the sheaves with the bands rather near the ears; these in fine weather are set up [illegible] for a day or two; then they are collected and built into small round stacks, rather less in diameter at bottom than two lengths of the sheaves, and gradually tapering till finished at top with one sheaf tied close to the butt, and put on with the ears down so as to thatch all the ears of those below. The builder stands on the ground at first, and finishes with a short ladder. If the weather is wet and precarious, the corn is "rickled" close up to the hook, scythe, or machines; the use of the sickle is almost unknown. Wet never penetrates these little stacks, because the sheaves lie elevated at the centre at an angle which becomes higher and higher, until the last sheaf placed vertically makes a cap for the whole. These "rickles" contain from 100 to 150 sheaves, and cost about 2d. per 100 sheaves, or from 1s. to 2s. per acre for building. When the crop is stacked, before it has stood in the sheaf long enough to harden the grain, a triangle is always formed of three poles about 12 feet long, fastened together at the top. This is raised on the stands with the bottom ends about three feet apart; or, if stands or staddles are not in use, then a stone or brushwood bottom is formed, with an opening leading to the triangle so as to admit free circulation of air; on this bottom the crop is built around the triangle, in stacks of from three to five yards in diameter, according to the condition of the corn, and thus the grain is preserved from heating and the straw from damage. In the western and midland counties of Ireland a similar system prevails, with this difference—that there the crops are all reaped and tied into very small sheaves, and that in building the field-stack the builder kneels on the stack, which is objectionable, because the sheaves get packed too close, and the wind and air cannot permeate the stack freely.

About thirty years ago, John Love, Esq., of Oakfield, in the county Kildare, invented a plan of making round shocks, with twelve sheaves and four small head sheaves, which, while they resisted the rain, permitted the wind to act on the whole mass; this costs about 1½d. per 100 sheaves. The damage done by these shocks standing too long in one place upon grass layers in wet seasons induced the author to invent a simple contrivance, at the cost of 12s. 6d., which enabled two men to move these shocks bodily at 6d. per 100 shocks of 16 sheaves each. This contrivance consisted of two bars of ash, 3 inches in depth by 1½ inch thick, and 7½ feet long, rounded at the ends for the hand to hold by; two ¾-inch round rods of iron, 4½ feet long, are fastened into the flat side of one of these ash bars, at about a foot from each end; corresponding holes being made in the other bar to receive the two rods, so that the bars can be drawn close together or slid apart at the will of the carriers. From the inside of the said ash-bars project four iron teeth, 3 inches long, set 15 inches apart. The carriers set these bars wide enough apart for them to pass over the shock, and lower them to within two-thirds of the bottom; they then press the bars together, and the teeth enter into the shock, which is thus tightly grasped and lifted bodily on to fresh ground. With this simple contrivance two active men can, with a good crop, move shocks at 6d. per 100. When the shocks are few and far between it will cost more.

As we travel from the north of England southwards, or in Scotland from the west, eastwards, we find that these extra precautions die away, until even the practice of putting head-sheaves on the shocks gradually disappears, and the grain and straw are alike left to the mercy of the climate, which of course seldom does much damage, or the intelligence of the farmer would prompt him to adopt the same means as others to prevent the loss. Still there are occasional seasons, such as those of 1841, 1845, and 1860, in which the plan of making shocks well capped and secure would have saved a vast deal of both grain and straw, which as it was were bleached and damaged. With the present rage for cutting corn green, capping is found to retard the hardening of the grain, and may be dispensed with, if the sheaves, placed with the knots of the bands turned inwards, are made to straddle properly, the ears being well pressed home together, and each pair of sheaves in the shock so adjusted that they can stand alone unpropped, even if some of the other sheaves be removed.

Before entering into the expense of the various operations of which this essay must treat, it will be desirable to calculate the annual expense of keeping a farm-horse. The keep may be thus estimated:—

				£	s.	d.
For 32 winter weeks—						
32 bushels of oats, at 3s.				4	16	0
32 bushels of beans, at 5s.				8	0	0
56 cwt. of carrots, at 1s.				2	16	0
Wheat chaff gratis.						
For 20 summer, &c., weeks—						
20 bushels of beans, at 5s.				5	0	0
5 tons of green rye, tares, Italian rye or clover, equivalent to one ton of hay, at				3	0	0
Total for food				£23	12	0
Blacksmith's bill, shoeing, and mending traces, &c.	0	12	6			
Harness-maker's, oiling, &c.	0	7	6			
Interest and tear and wear of harness, 10 per cent. upon £3 10s.	0	7	0			
				1	7	0
Insurance of life, with tear and wear on £35, the value of horse, at 10 per cent.				3	10	0
				£28	9	0
Tear, wear, and interest on machines, &c., for preparing food, 10 per cent. upon £1 10s.				0	3	0
				£28	12	0

Further, as to the rate to be charged for the use of a horse, this ought to vary with the demand for his service at different seasons. There are not more than 250 working days in the year in all. Of these—

60 days for harvesting and seeds, charged at 3s. will make	9	0	0
90 for manure carting, root harvesting, &c., at 2s. 6d.	11	5	0
100 days at slack time, charged at 1s. 8d.	8	6	8
	£28	11	8

—a sum which agrees with our estimate of the total cost of keeping a horse.

I shall now proceed to the consideration of my subject in reference to the various methods of harvesting practised in England, viz.:—reaping high, reaping low, bagging, mowing, machine mowing, and machine reaping; in all of which I have had nearly thirty years' experience and close observation. For above twenty years I have been in the habit of taking the number of sheaves, of a given size, as the fairest and best test of the economy of those different systems, in all their bearings, as to cutting, carting, stacking, thatching, and threshing.

I find that a full crop of wheat gives about the following number of sheaves per acre (of from 8 to 10 inches diameter): —when reaped high, 160; bagged, 180; mown, 200; machine-reaped, 170; machine-mown, 180, for each foot in length of straw. Oats gives about a fifth more; and barley, when free from seeds, a third more, but with a layer often double.

We may take as our standard a crop of wheat, one of about 40 bushels per acre, the straw of which will be about 5 feet long; this, if reaped 18 inches high, will give 560 sheaves, which, at the price of 1s. 9d. per 100, will cost 9s. 11d. per acre for reaping. The same reaped low, at 6 inches, gives 720 sheaves; and, at the same rate, costs 12s. 7d. per acre.

Bagging should be done so as to leave a stubble 3 inches high, and will in the aforesaid crop produce 855 sheaves, which at 1s. 2d. per 100 cost 9s. 11½d. per acre. Mowing is done at about the same height as bagging, at the price of 10½d. per 100 sheaves; producing 959 sheaves, and therefore costing 8s. 3¾d. per acre.

By machine-reaping I mean the work of such reaping-machines as by manual or mechanical power deliver the crop in parcels large enough for sheaves; such as Hussey's, M'Cormick's, Dray's, and others, made on the same model by other makers. Among these Dray's stands foremost, which, with fair management, will cut an average of 8 acres a day, or 120 acres in 15 days, which will represent the average quantity cut in a season. The tear and wear of the implement must be distributed over that number of acres. If this be estimated at 20 per cent. on £30 (the average cost of the reaper, including carriage and extras), the charge for the use of the implement amounts to 1s. per acre on these 120 acres. Three horses will also be required, 3s. apiece per day; likewise two good labourers at 4s. each including beer, who will take it in turns to drive and deliver the crop. These together cost 17s. for the 8 acres, or say 2s. per acre, which, with 1s. for wear, &c., of machine, gives 3s. as the whole cost of machine-cutting and laying in parcels ready for tying into sheaves. Our standard crop when thus harvested will produce about 810 sheaves, which for tying and shocking will cost 4½d. per hundred, or 3s. per acre, making, with 3s. for cutting, a total cost of 6s. per acre.

Bell's, Burgess & Key's, Lord Kinnaird's, Smith of Deanston, and Crosskill's, are all swathe-delivery or mowing machines, which ought to take a wide cut, or the swathe will be so thin that the cost of gathering runs away with much ol the saving effected in cutting.

The differences to be found in the reports of various persons who have used these machines have arisen chiefly from the different management of their respective drivers, upon which both the increase in bulk of the straw cut, and in the cost of gathering and tying, has depended. Having used these machines more or less during the past nine years, I will now give an estimate of their expenses for a swathe of about 5 feet in width. These machines, with extras and carriage, will cost about £50; if we allow £10 (or 20 per cent. on the prime cost) for wear and tear and for repairs, and assume that 150 acres is the extent which each will cut in an average season—then £10 distributed over 150 acres will give 1s. 4d. per acre as the charge for the use of the implement; to this must be added the cost of men and horses. Now four horses at 3s. per day as before, and one man at 4s. including beer, making together 16s., will cut ten acres a day, so that the charge per acre for men and horses will come to 1s. 7d., and the entire cost of cutting to 2s. 11d. The number of sheaves on our standard crop will be about 850, which, for gathering, tying, and shocking, at 7d. per hundred, cost about 5s. per acre, with about 3s. for cutting; about 8s. per acre in all. For upwards of twenty years I have paid for cutting and carting my crops at per hundred sheaves, finding this the best criterion to go by, as the immense difference in the bulk of straw, produced by difference of soils, as well as by high or low farming, renders any other standard defective.—*From Prize Essay of the Royal Agric. Society of England, by Mr. Love.*

HIGH FARMING FOR IRELAND.

We give Mr. Hope's account, from the *North British Agriculturist,* of his farms of Fentonbarns and Dirleton, in full, considering it will be of use to our landowners and tenants, and induce the graziers to cultivate their rich land on the same system. In England and Scotland the farmers of capital prefer renting land to purchasing, for the capital invested in purchasing would prevent them cultivating the land properly. Alderman Mechi, of Tiptree, is both farmer and landlord of about 300 acres. As Mr. Hope pays about £4 per acre for his good lands, we question if Tiptree be not exceeded in its farming by Fentonbarns. In Ireland the small farmers would like to be their own landlords, differing in this respect from the capitalists of England and Scotland, who expend so much in labour and manure on their holdings.

Fentonbarns consists of 670 acres. This includes the space occupied by buildings, gardens, fences, and roads. The farm is held under a lease of twenty-one years, nearly two-thirds of which has expired. The farm was occupied by the father and grandfather of the present tenant, and has been in possession of the family for upwards of eighty years. The farm is well known in the annals of British agriculture in connection with the name of the present tenant, Mr. George Hope, and his father, Mr. Robert Hope. The visitor can form only an imperfect idea of the original state and condition of the lands previous to the reclamation of a considerable portion, the completion of the drainage by the insertion of parallel drains, and the adoption of a system of high farming. The elevation is from 30 to 100 feet above the high-water mark. The farm is generally level. About one-third of the farm consists of a fertile loam on interjected greenstone: another third a heavy or clay loam of medium fertility, lying on boulder clay and interbedded felstone; and the remaining third is a yellow moorish sand on alluvial clay of great depth, and which comes to the surface at various parts. The fields are all divided by thorn hedges, the whole of which were planted by the father and grandfather of the present tenant. The latter has placed large tiles in almost the whole of the ditches which formerly surrounded every field, and thus added to the arable land. He has also, by removing fences, increased the size of some fields, and rendered others more square in shape.

The lands being frequently difficult to reduce, involving a great amount of horse labour, one of Howard's cultivating apparatus with engine was obtained in the autumn of 1864. The engine, manufactured by Messrs. Clayton, Shuttleworth, and Co., is of ten-horse power. The price of the whole was £650. The length of wire rope originally obtained was 1,600 yards; since that time 400 yards additional have been procured. The increased length of rope has tended to expedite the cultivation of the land, particularly where the fields are large. The additional length of rope has proved so decided an advantage that Mr. Hope recommends that not less than 2,000 yards should be obtained at first by those purchasing one of Howard's steam cultivators. The cost of repairs of tackle has been almost nothing, the breakage having been so insignificant that £5 will cover the whole outlay. This expense for repairs, taking into account the number of landfast boulder-stones, and the extent of land gone over, is a remarkable example of the successful application of steam-power to the stirring of the soil. We were shown a heap of stones weighing not less than one hundred tons, which had all been taken from one field. These stones had been under the common plough-furrow, and it was only when the steam-cultivator was used that their presence was discovered, and their consequent extraction from the subsoil effected. The landfast stones are marked as they are touched by the points of the cultivator, and labourers afterwards remove them by means of spade, pick, crowbar, and frequently by the use of gunpowder. Where the obstructing rocks reach the surface they have in two or three fields been quarried, and earth carted on to form a soil. The fields, numbering twenty-seven, are generally large. The fences are usually straight—a condition favourable for the application of steam-power, even when the engine is stationary as in this case. The time required to lift, convey, and lay down the cultivating-apparatus takes from three to four and a-half hours.

The extent cultivated or grubbed is about seven acres daily; extent harrowed about ten acres. The depth the grubber enters the soil is from eight to twelve inches. The harrow moved by the steam-engine is found to be a great acquisition to the other cultivating implements.

During the autumn of 1865 the extent cultivated for wheat, upon the removal of the potato and bean crops, was 103 acres: 97 acres of the bean land were gone over twice by the grubber: 94 acres of stubble land were also grubbed. This spring there were grubbed 114 acres, from which a turnip crop had been removed, one-third to one-half of the crop being eaten by sheep folded on the land. The sheep having received cake, corn, and hay in addition to the turnips, the land was as much compressed as if the whole turnip crop had been eaten by the sheep folded. Thirteen acres had to be grubbed twice to enter deep enough into the soil, and to reduce it sufficiently. Betwixt 140 and 150 acres were grubbed in preparation for the potato and turnip crops, and 105 acres were harrowed by means of the steam-harrow.

The steam-engine and cultivating apparatus have proved, during the springs of 1865 and 1866, of great utility in the preparation of land intended for turnips—expeditious and deep stirring being of advantage in the seeding of the land; on Fentonbarns the turnip crop, since steam-power was applied, has been got in early and been superior.

For several years none of the ordinary rotations have been followed. In future the six-course rotation is to be observed, to bring the farm into the state required at the expiry of the lease. The extent of the various crops of the present year is as subjoined: Potatoes, 82 acres; beans and vetches, 33 acres—grown in rows 16 inches apart; turnips, 88 acres—the extent of swedes, yellow, and white turnips being about one-third of each, the greater proportion, however, being swedes; wheat, 126 acres; barley, 88 acres; oats, 54 acres, mixed ray-grass and clover for cutting, 21 acres; pasture, 85 acres of young grass depastured; extent of second year's pasture, 50 acres; in permanent pasture, 3 acres; turnip seed, 15 acres, the variety being East Lothian purple, top swede.

In addition to the farm of Fentonbarns, Mr. Hope occupies another farm on the Dirleton Estate. This farm lies close to the estuary of the Fiith of Forth, betwixt Dirleton and the sea, and contains on the north the links or duns raised at one time by the drifted sands of the sea-shore, and now retained by the roots of the bent-grasses and other coarse herbage plants. Dirleton farm amounts to 220 acres arable, and about 500 acres of "links" and permanent pasture. A part of the links is waste, there being almost no vegetation of any kind, "bent grass" excepted. The improvement of the sandy and calcareous soils of this farm by claying is a most remarkable example of what can be effected by a liberal application of clay to such light soil, having so little cohesion that, when broken up by the plough and reduced, the strong breezes blow away the soil and tender crops. The claying has been carried out by employing horses in single carts to remove the clay dug in various parts of the farm to those portions where the soil is a fine sand with broken sea-shells interspersed. Sand is there taken to fill up the spaces from where the clay has been removed. As the "claying" proceeds at the rate of about two hundred cart-loads per acre, the texture and fertility of the land is changed. Previous to "claying," the stunted crops rendered it questionable management to attempt to cultivate such apparently worthless land; now the whole appearance of the crop when growing is changed, their productiveness is more than doubled and in some instances it has been quadrupled. About 100 acres have been clayed, at the rate of two hundred tons per acre, the clay being found on the farm; the expense of cartage is not great, as the work has been done generally when the horses could not be otherwise employed on the farm. This change in the productiveness of the soil has not been due to the clay alone. A liberal application of auxiliary fertilizers has advanced the manurial condition of the land, and the two acting in combination have rendered the crops greatly superior to any previously grown on the land, and, indeed, fully equal to those raised upon the naturally-good soils in the parish of Dirleton—a parish justly celebrated for the productive crops grown by the enterprising and skilful occupiers of the soil.

The following is the extent of land under the various kinds of crops growing at present: Potatoes, 31 acres; turnips, 50 acres, nearly all sown (10th June); barley, 38 acres; wheat, 9 acres; oats, 34 acres; rye, 6 acres. The remainder of the arable portion is in pasture, the land being usually grazed for three years. The potato break was pastured for three years, the land being ploughed out of grass for the potato crop. Mr. Hope finds it advisable to take potatoes immediately after the grass this season. Fifty acres of the potato-break on the farm of Fenton were depastured the last three years. The grass-land is ploughed with a furrow from 12 to 14 inches deep. A two-horse plough turns down the surface sward, and a second plough follows, which turns up the soil left by the first plough. The manure used consists of a mixture of Peruvian guano and superphosphate, four cwts. of each substance being used to the acre. The drills are 28 inches apart; distance between sets, 10 inches. Mr. Hope does not approve of wide-apart setting, his experience being that when the sets are placed wide apart the tubers are very unequal in size, a portion being too large for the English market, while many of the large potatoes are hollow in the centre—due, some believe, to their rapid growth.

The weight of produce is considerably above the average grown on similar soils, even with the application of farmyard manure, when succeeding a grain crop. The potatoes are more uniformly good in appearance, and when cooked are found to be generally of a superior quality. By this method of growing potatoes farmyard manure is not requisite to ensure full crops; but to ensure this, the grazing stock are liberally supplied with linseed cake and corn. Mr. Hope usually plants a part of his potato crop after a turnip crop, eaten on the land with sheep, or an equivalent amount of cake and corn consumed in lieu of a portion of the turnip crop carted off for cattle. Large crops of potatoes have been raised by this method, and the succeeding wheat crop is generally luxuriant and prolific, and the clover and grass which follow are invariably well planted.

The crops of corn, potatoes, and turnips raised are generally superior, being usually more productive than their appearance when growing would indicate. The wheat ("Fenton") produces an abundant return; barley (Chevalier) yields well; the oat (potato) gives a large produce of fine plump grain. The beans and tares, grown as a mixture, also produce abundantly. We know of no farm where the yield of grain per acre exceeds that usually grown at Fentonbarns. The average produce has been greatly raised during the last twenty years: the beneficial effects of the system of parallel drains, deeper stirring the soil, and the liberal application of manures continued for years have acted and reacted on the fertility of the land, and consequently upon its productive capabilities. Hence has resulted the doubling of the marketable produce alike of corn, beef, mutton, and wool, since the time of Mr. Hope's management. The fine crops grown at Fentonbarns are by many considered to be due more to the natural fertility of the land than to the application of the principles of successful cultivation, labour judiciously and skilfully directed, and manures liberally used to maintain and advance the exhaustive process of growing large crops for sale.

The expenses connected with the labour of the farm are higher than the average of the district. On Fentonbarns the number of servants engaged by the year is nineteen; including one steward, one shepherd, and one man who acts as gardener and attends the thrashing-engine, makes gas, &c. At Dirleton there is one shepherd, three ploughmen, and two orra-men. Upon both farms there are a number of men employed by the day. Besides these there are betwixt thirty and forty women and boys engaged on the farm cleaning the crops, harvesting, and preparing the crops for market. The annual expenditure upon labour is not less than £1,850 for the two farms, being at the rate of 40s. for each acre cultivated.

Thirteen pair of horses are still kept. The reduction in the number required since the steam-engine with tackle was acquired has been only two pair; the saving in the keep and tear and wear of four horses is small. The explanation is that the improvements at Dirleton which have been proceeded with during the last two years have involved a great deal of horse work in the carting of clay, stones, &c.; the carting of the farm manure and the large potato crops likewise involve a great amount of work to be done by carts. It is necessary to keep in view that the horses are now less severely taxed in the stirring of the land; they are, consequently kept in better condition; the field labour is always well advanced; the various operations of the farm are executed at those seasons the best adapted to ensure efficient and perfect cultivation; and there is less anxiety felt for the delays arising from the occurrence of a tract of wet or unseasonable weather. The stock kept is as follows:

Fentonbarns.—Cattle: One short-horn bull; five cows kept for the rearing of calves, &c.; twelve cows belonging to the farm servants; eighty cattle are fattened annually in courts, receiving turnips, and straw with cake. The calves reared number from eight to ten; this year there are eighteen or twenty; these are fattened and sold at the age of from twenty to twenty-four months; the price this winter averaged £23; cattle purchased, and sold fat when three years old, realized from £20 to £31 10s.

Sheep: A flock of Leicester sheep is kept, the number of ewes being 110. Three crops of lambs are taken, when the ewes are sold fat. The ram lambs, numbering about 60, are kept and sold as shearlings. The best of the ewe lambs are retained for keeping up the flock; the drafts are sold. From 180 to 200 Cheviots ewes are annually brought to Fentonbarns and Dirleton from the sheep farm Glencotho, the property of Mr. Hope. These ewes produce one crop of half-bred lambs. The lambs are reared and sold fat as hoggets. This spring there were 240 hoggets fattened, and upwards of 300 Cheviot two-year-old wethers; the latter, sold in March, averaged 65s. On Dirleton farm there are also 112 half-bred ewes —Leicester Cheviots—kept for producing three-parts-bred lambs, and 300 Cheviot hoggets wintered. These form part of the hill stock of Glencotho.

Feeding substances used annually consist of about 100 tons of corn and cake, principally linseed cakes, but about 200 qrs. of grain are eaten by the stock.

Manures: This season there were purchased 56 tons Peruvian guano, 7 tons nitrate of soda, and 70 tons of superphosphate. Formerly broken bones were largely purchased, seldom less than 200 qrs. being used in spring. The amount of guano purchased was also greater in previous years. The superphosphate and nitrate of soda are being substituted for the more expensive fertilisers, Peruvian guano and broken bones. Police manure is also obtained from Edinburgh. The carriage by the railway is 1d. per ton per mile; price of the manure put on the railway, from 2s. 3d. to 2s. 6d. per ton. The outbreak of the cattle plague in the Edinburgh town dairies put an almost entire stop to the use of police manure in the country, and for the last twelve months none has been brought to Fentonbarns. Lime in the form of compost is now being applied; from 50 to 60 tons of lime being annually brought to the farm to be mixed with the collected weeds, road-scrapings, and other substances.

The amount of produce per acre, alike of corn, potatoes, beef, mutton, and wool, greatly exceeds the average of the county of Haddington. This is the result of high farming. The expenses of cultivation are necessarily above the average, while the annual outlay for feeding purposes and for manures averages about £4 per acre. During the last thirty years the expenditure upon manures has seldom been under £2 per acre for each acre under cultivation.—*Sligo Independent.*

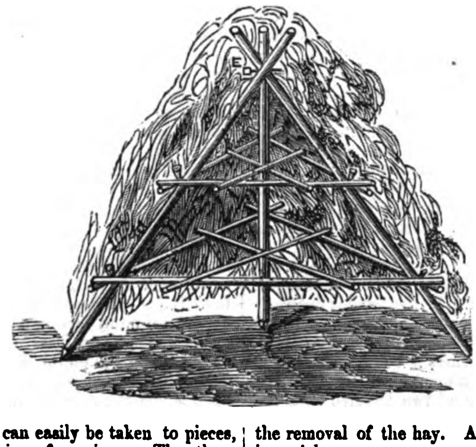
THE MAKING OF CLOVER AND LUCERNE HAY IN THE SOUTH OF GERMANY.

Sir,—On reading the article on the preparation of clover-hay, which appeared in your number for August (page 133), I was struck by not finding any mention of the method (much practised in this country) of drying the hay on wooden frames of a pyramidal form.

Not knowing whether this system is in practice in any part of England, I take the liberty of giving the following short description of it here.

The clover or lucerne, after having been cut with the scythe or machine, is left in swathes until sufficiently dry, and is then placed on the aforementioned pyramids, where it is left until fit to be carried. It often happens, in very bad weather, or when no time can be spared for carting it, that the hay remains in this situation for several weeks.

The following fig. is a representation of one of these structures or pyramids. On the extraction of the wooden peg shown at E, the whole structure can easily be taken to pieces, and is thus rendered much easier of carriage. The three principal poles have a length of about 10 feet, and are of the thickness of a common hop-pole.



The advantages which this method possesses over that of placing the hay in cocks, are the following: In the first place, a much smaller surface, in comparison to the bulk of hay, is exposed to the vicissitudes of the weather than is the case with cocks; secondly, the hay not lying in immediate proximity with the soil, is not so detrimental to the growth of the young clover under it; and, besides this, a thorough circulation of air in the hay can take place. Added to this, if the clover or lucerne is in the last year, there is always sufficient room between the pyramids to partly plough up the stubble before the removal of the hay. About 16 to 20 pyramids suffice per imperial acre.

The disadvantages alleged against this method are: firstly, the original cost of a sufficient number of pyramids on a large farm; and, secondly, the additional annual expenditure for the repair of the same. Added to this, the hay cannot be loaded off the pyramids so quickly as from the cocks.

In conclusion, the following deductions may be drawn as regards the respective merits of the two systems, viz., That on all small farms the system with pyramids is decidedly the best, whereas on large farms the question arises, "whether the improved quality of the fodder obtained by this method sufficiently repays the larger outlay necessary for the purchase and repair of a sufficient number of pyramids." C. W. S.

AGRICULTURAL MATTERS IN SCOTLAND.

At a late meeting of the Leslie Agricultural Society, Mr. **WILLIAM M'COMBIE**, of Tillyfour, who was called to the chair, said: We must look up to such promising young men as are here to-night for the advancement and progress of further improvements in Aberdeenshire. It is surely the duty of the old to lend them a helping hand in such a commendable undertaking. My young friends, I congratulate you on the formation of this society, and I cannot express the pleasure it affords me to be here to give you my support. One of our best proprietors, Colonel Gordon, of Fyvie, at a dinner I had the honour to receive some years ago, in the Music-hall of Aberdeen, was pleasad to do justice to the tenant-farmers of Aberdeenshire. He stated that "the great improvements of the country had been effected by the tenant-farmers." I am sure, gentlemen, I not only speak my own feelings, but the feelings of this meeting, and of the tenant-farmers of Aberdeenshire, when I say that we bear the highest respect to our good landlords; and no one deserves that respect more than Colonel Gordon, of Fyvie. It is with confidence that I affirm that it is to the indomitable energy, skill, perseverance, and sobriety of the tenant-farmers that Aberdeenshire has attained the highest position as the greatest cattle-breeding and feeding county in Britain. Most important subjects must come under the consideration of this association. I shall only glance at a few of them. The breeding, rearing, and feeding of cattle is the most important. It is by our cattle we take our stand, and through them we have attained our fame. Aberdeenshire, owing to its climate, must ever remain a cattle-breeding and feeding county. It can never come into competition with the more favoured climate of the south, and some counties in the north, as a sheep-feeding county. You will have to study the best methods of raising our turnip and grass crops, as without good turnips and grass our cattle would be worthless. You will also study the different varieties of the turnip-plant best adapted to your soils, exposure, climate, &c., the proper season for sowing the different varieties, their treatment during their growth, and the storing, as far as is in your power, when ripe. The selection of your grass and clover-seeds will also meet your attention; and as much of our land is clover-sick, and refuses to grow the red, and even white clover, you may try experiments on the subject. An increase of clover, with less of ryegrass, might be one experiment. I have adopted the plan with considerable success. The rolling of the land, and a fine mould, are absolutely necessary before the seeds are sown. Wheat and mangel-wurzel cannot be grown with advantage generally in Aberdeenshire. We must leave their cultivation to our friends in the south and the favoured counties in the north; but the cultivation of oats and barley will meet your attention. Their different varieties, and the collection of their seeds, will prove a most interesting and valuable study. We have much to learn as to the selection of oats adapted for different soil, exposure, climate, &c. While the potato-oat may prove the most valuable of all on one farm, where the soil is good and well-sheltered, on a high-lying, exposed district, it may be the most unsuitable. On other early thin soils, the Kildrummy may be suitable. On late farms, they become unsuitable, owing to their lateness; while on medium land, the Scots birlie oats may produce the best return by the acre. On thin land, after turnips, the Sandwich may prove the best; but they require to be thick-sown. The English birlie oats are perhaps the earliest variety, except the Angus oats; but the Angus generally grows less straw than the Scotch or English birlie. You will likewise have to consider the advantage of a change of seed, and whether bere or barley is best adapted for your soil. I have no doubt you will also take into your consideration the condition of our farm-servants, labourers, tradesmen, and crofters, and consider what you would propose for their elevation.

Mr. **WEBSTER**, Newlands, Fintray, read a short essay on "The Effects of Legislation on Agriculture." He touched briefly upon the effect produced on agriculture by the corn laws; the law of hypothec; and, in relation to the latter subject, brought out by a course of reasoning that landlords have in the meantime forehand rents for a large proportion of their ground. To continue the law of hypothec is to give the landlord power over the land market, and the operation of the law is detrimental to the interests of poor tenants. He considered the law of primogeniture and the law of entail gives to the landowner a concentrated influence and a power of retention either in respect of property or power; and that the corn laws, the drainage act, the law of hypothec, and the game laws give them power to draw from the community, through the farmer, the largest possible amount of money under the name of "land rent." The effect of that is that in the meantime farmers are in general affording and managing their capital to the owners of the soil for food and clothing, and the labourers, if married, can do nothing more than secure these indispensable necessaries. Referring to the Game Law Bill introduced into Parliament last week, he said: "A bill is before Parliament meantime for the confessed object of healing the discontentment and filling up the breach which has broke out, and is widening so fast, between the possessors and the cultivators of the soil. This bill professes to give the farmers what they want, and it will do this if the landlords acquiesce. But if the landlords do not think proper to allow the tenants to protect their crops from the ravages of wild beasts, then the bill will prove a source of weakness to the tenant. It will leave him in a single-handed combat with his proprietor, and that, too, in the midst of a fierce conflict or competition for the ground. The tenant's chances to hold his own in a position of this kind are poor indeed; and this bill seems to have been brought forward for the ostensible purpose of having the question settled between the landlords and their tenantry, and not to have the question settled by an Act of Parliament at once setting at rest the landlord's right and the tenant's privileges, in a question which involves alike the interests of the peasant and the prince." Referring to the drainage loan, he said the Government taxes the population, and lends the money to the landowner to drain the soil. The capital and interest of these loans have to be repaid by instalments in twenty-two years. The landlord is security for the payment; but the tenant generally pays the whole per-centage, expecting the profit likely to accrue from the improvement to be worth more. This cannot be defended on principle, because it is taking the people's money at the lowest rate of interest to improve the soil, and in return make them pay the highest market-price for the produce of the improved soil. It cannot either be called politically just to collect money from the whole population, and lend it to a class at the minimum rate of interest, whilst the public are paying two, three, and even four times that rate for money before they can either carry on business or secure the necessaries of life.

Mr. **MITCHELL**, jun., Annegathel, Keig, spoke on the progress of agricultural improvements since the beginning of the century. He explained the improvements which he considered enabled the land to yield a greater produce, without an equal increase in cost of labour; and those which diminished the amount and cost of labour, but did not diminish the cost of the produce. Referring to the importance of the agricultural community, he said it was very strange that out of their own number, with one exception, they had no representative in the House of Commons. Surely amongst the two thousand tenant-farmers in Aberdeenshire one could be got who would state their grievances and opinions in the House of Commons. He did not expect that the landowners in Parliament were to benefit the tenantry, especially when it was to be done at a cost to themselves. He should recommend, therefore, that at the next election, which might not be very far distant, the tenant-farmers of Aberdeenshire should return a member who was one of themselves. If this was done, agriculture would take a new start, and the restrictions under which they laboured would be removed.

Mr. **SKINNER**, Cottown, Leslie, proceeded to remark on the position of the farmer, which he made out to be a very poor one. The proprietors had the advantage of the tenants' enterprise and improvements; while the tenants' rent and daily expenses had been increasing simultaneously. There had been a great rise in the farm-servants' wages. He did not complain of the men taking all they could get for their labour, and he would not grumble at giving them more, provided they could get the money to pay them with withheld from the proprietors. With reference to the Game Laws, he was glad to learn that a Bill had been introduced to Parliament, although he thought it scarcely worthy of the name. He trusted the bill would not pass till it was in accordance with the wishes of the farmers.

Rev. Mr. PETER said: Allusion had been made to a member of Parliament being got from among the agricultural class; and he should say that he should be delighted to see his friend (Mr. M'Combie) with the handle of M.P. behind his name.

Mr. BRUCE, Johnston, said the Game Laws were not so iniquitous as the contracts that the tenant-farmers voluntarily entered into with the landlord. The tenants bound themselves in their leases to protect the game, and then raised a cry abo the game laws. He thought the time had arrived when the should have a Board of Agriculture. If they had such a board the country would not have suffered so much from rinderpes the suppression of which was handed over to parties wh knew nothing about it, and who bungled it.

The CHAIRMAN gave as his opinion that the game laws wer legal, and must end in this—that a law must be passed t prevent any proprietor having it in his power to bind his te ants to protect game. The law of hypothec he believed to b a law to keep the poor man always poor. He arrived at thi conclusion after inquiring among the small farmers and crofte in his neighbourhood. He found that they were very anxio to have the hypothec law abolished. He believed every ten ant in the room paid one-fourth more rent for their small a large farms than they would have to pay if they were n under that law.

ARTIFICIAL MANURES, AND SEASONS FOR APPLICATION.

A discussion-meeting of the Framlingham Farmers' Club was recently held at the Crown Hotel; F. S. Corrance, Esq., the President, in the chair.

The subject was "Artificial Manures, and Seasons for Application," and was introduced by Mr. EDWARD PACKARD, Jun., of Ipswich, who said he proposed to give a general sketch of the history, manufacture, and constituency of artificial manures; a few remarks on the raw materials; and some statistical information; whilst he would leave the latter part of the subject as the basis of the discussion which would follow. He pointed out that some fertilizers which are called artificial manures, such as guano, &c., might be indirectly derived from the consumption of food by animals, or were the product of the growth of plants; but it was convenient to term them artificial manures. The principal object of agriculture was to restore to the land the substance removed from it, which the atmosphere cannot yield, in whatever way the restoration could be most easily effected. Morton said—and it was generally admitted—that there are few farms on which home-manure was produced in sufficient quantities to replace all the materials carried from the soil by the crops; and how was that deficiency to be made up? There was clearly but one way open, and that was by the use of artificial manures. He then proceeded to sketch the history of artificial manures. Previous to 1840 very little seemed to have been generally known of agricultural chemistry; and yet, strange to say, no less than 1,900 years ago, Columella, in a work on agriculture, dilated at some length on the benefit to be derived from an application of ashes and other manures, and advised, where these were not easily obtainable, that a crop of lupins should be grown in the autumn and ploughed in; and yet, not much more than thirty years since, this was considered by many a new idea. He (Mr. Packard) had no doubt bones had been used for very many years. The first importation of guano into this country consisted of thirty bags sent in July, 1839, to Messrs. Myers and Co., of Liverpool; but it was not till 1841 that a whole cargo was imported. The first application gave satisfactory results; and the importation gradually increased till, in 1858, it reached upwards of 300,000 tons. It was not till soon after the first importation of guano that the fact of chemistry having practically anything to do with agriculture seemed to have been thought of; but about this time Professor Johnson's work on Agricultural Chemistry was published, and in 1840 Liebig published a work which led scientific persons generally to think more of the subject. Then a great era in agricultural improvement commenced; for chemistry discovered that plants took up various substances from the soil, in a soluble form only; and the happy idea occurred to Liebig to dissolve bones and other materials in acid, and thus artificially render soluble the important combination of phosphoric acid contained in them, thereby at once supplying the plant with its requirements in that respect. To the researches of Baron Liebig was due the vast amount of industry that the production of 500,000 tons of artificial manure entailed. In 1848 he did not know of more than three manufactories in Great Britain, and now there were from sevent to eighty; and the manures manufactured twenty years ag could not compare with those of ten years later, any mor than the latter could with the products of the present manu facturers, either in chemical composition or mechanical con dition. He next came to the raw materials, and first spok of the coprolites of Cambridgeshire and Suffolk. Th Suffolks contained from 54 to 56 per cent. of tribasi phosphate of lime, and Cambridgeshires from 61 to 62 pe cent. of phosphates, and were capable of being rendered mor soluble than Suffolk coprolites. He had been unable to obtai information as to the gross quantity of coprolite which ha been raised in Suffolk; but as to Cambridgeshire, in 1863, about 422 acres were purchased or hired for raising coprolite, which were capable of raising 131,500 tons, of which 79,130 tons were raised in that year, in which 2,375 men, 40 steam engines for driving washing machines, and an equal number of stone mills were employed, to say nothing of the horses, carts, and implements used. How long the deposits would stand the immense pressure put on them it was impossible to say. He calculated up to the present time, not less than 400,000 tons had been raised. Having noticed phosphatic deposits in Yorkshire and Cheshire which were unavailable on account of the large amount of oxides of iron they contained, he said there were also the Bedfordshire coprolites of similar composition to the Suffolk. Phosphorites have been found in almost all parts of the world, of which the most valuable deposit was in the Island of Sombrero in the West Indies, where 13,000 tons were annually quarried, of which 6,500 came to the United Kingdom, and owing to the high percentage of phosphate of lime it contained it was now largely consumed in the manufacture of phosphorus. Bone ash was the next most important article, and of it 12,000 tons were imported, and there were many other substances, as sulphate of potash, nitrate of soda, sulphate of ammonia, used by the manure maker. He could not pass over the natural guanos, of which there were twenty-two different kinds, and he mentioned the deposits of Peru, especially referring to the Chincha Islands. During the nine months ending September 30th last, the total quantity of guano imported was 170,945 tons, against 82,683 in 1864, and 170,382 in 1863: to these figures Peru contributed 150,472, 69,217, and 159,390 tons, and the value during the first eight months of 1865 was estimated at £1,685,803. He next spoke of the necessary constituency of artificial manures. The object of the employment of artificial fertilizers was to supply to the soil those substances which had been taken from it by previous crops, and furnish such substances as the soil itself was naturally deficient in. It consequently was necessary that they should thoroughly understand the chemical composition of the plants themselves, and, above all, make themselves perfectly acquainted with the composition of the soils. It would be bad policy to apply to land a manure based simply on the ash constituency of the plant, because the soil itself might contain an abundance of one of the required sub-

sufficient, not only for one, but numbers of crops, but
e same time might be deficient in something else, without
the plant would not arrive at a proper maturity, and
re a manure should be used which supplied the wants
he soil, so that when the soil had been manured for a cer-
crop it would contain all that was requisite for the deve-
t of a perfect plant. By analysis it was found that
hes of plants contained in greater or less proportion,
lime, magnesia, potash, soda, oxides of iron, sulphuric
phosphoric acid, chlorine and fluorine, and occasionally
. Every class did not contain these ingredients in
e proportion, for nearly every variety of plant con-
some principle peculiar to itself which gave rise to
tinguishing characteristics of its produce. Thus
cereal crops the predominating mineral was
whilst in root crops it was phosphoric acid and pot-
As a rule, highly nitrogenous manures produced
gest crops of cereals, whilst for root crops manures
ng a large proportion of soluble phosphoric acid gave
result. The reason was obvious, for a fair crop of
removed from the soil 25lbs. of phosphoric acid, whilst
turnip crop removed 40lbs. He here spoke of the
ic food of plants, for vegetables do not derive all
tituents from the soil, receiving that most important
carbonic acid from the atmosphere, yet some assimi-
greater part of what they required by means of their
he atmosphere also supplied plants with ammonia,
at one time thought, in sufficient quantities to
uirements of each crop; but Liebig said the food
the atmosphere did not suffice to enable the plants
ir maximum size. Although nature supplied am-
antities sufficient to maintain the growth of plants
d state, yet when they wanted to grow crops of the
y the ammonia the plants were capable of obtaining
r was totally insufficient, but the deficiency might
p by means of manures, and it made no difference
source that substance was derived, so long as the ma-
not contain substances absolutely deleterious to vege-
The same might be said of soluble phosphoric acid,
d been proved that soluble phosphates derived from
were of equal benefit to those derived from bones.
made from bones were often recommended because it
they not only benefited the crop for which they were
but also the two or even three succeeding crops. Now
doubtful question whether it was a profitable invest-
purchase a manure which not only cost more, but of
nly a part came into immediate use and part had to re-
the soil until the third year before it assumed an avail-
. Would it not be better to employ a manure which
once into action, and for which they got their return
rst crop for which it had been applied? But to return
oint under their immediate consideration—whether or
ly ammoniacal manures alone were a profitable appli-
It was acknowledged that plants could not take up
their required constituents unless they could also obtain
her ingredients that they required. If one of those
s was absent or present in an unavailable form, it nul-
e efficacy of the other constituents which were present,
imperfect plant was the result. The addition of a
plication of ammonia on a poor sandy soil containing
minute portion of phosphoric acid would have no bene-
fect on the plant; for as Liebig said, "Ammonia is
effect if the mineral constituents are wanting." But
ng the soil contained an average proportion of phos-
acid and other necessary mineral ingredients, the re-
a liberal application of nitrate of soda would be a large
portionately additional yield, arising from the fact
e large quantity of ammonia set free a proportionately
quantity of mineral food of plants contained in the
And now he came to the point he had been aiming
hat would be the result of a constant application of am-
? Would it benefit the soil or not? Would it leave the
as good heart as before its application? He thought
if they were continually taking away the valuable
ingredients the soil must become impoverished; and
h their expenditure in nitrate of soda had been amply
at the time, yet the money they would have to lay out
r to bring back the land to its original fertility would far
those profits. Did they not think instead of running
k the safer plan would be to apply a manure containing
a fair proportion of soluble phosphate together with a fair proportionate quantity of ammonia, for then they would not only increase the yield, but keep the land in good heart? He next directed their attention to artificial manures in connection with root crops. Phosphatic manures were best for turnips and swedes, whilst a manure of more varied constituents but containing the largest possible quantity of soluble phosphoric acid was best for beet. As regarded the other requirements of roots, although on certain soils rich in potash, salts, and chlorides, a purely phosphatic manure such as superphosphate of lime gave the best results, on the whole soils generally did not contain an abundance of these substances, and it was necessary that they should supply the wants of the soil in that respect, and he thought a chemically prepared turnip manure was the most beneficial and economical dressing. Still the great value of purely phosphatic manures for pushing forward the young plant and helping it past the ravages of the fly must not be overlooked, and he recommended manures containing a large quantity of phosphate of lime, in a highly soluble form, with a fair proportion of potash, chloride of sodium, &c. On stiff soils good crops were obtainable from superphosphates alone. They might have observed that his comparisons had been between the root and wheat crops, and nothing had been said about barley, and his reason was that barley was grown under different circumstances to wheat, being not much longer in arriving at maturity than the root crop, and must also require a manure in an easily available form and in sufficient quantities to produce a maximum crop. For barley, he recommended a manure similar to that suited for wheat, but containing a larger proportion of soluble phosphoric acid and a rather less quantity of ammonia. It was now usual to use artificial manure for clover layers, and an addition of a top dressing for these and grass crops was beneficial, and it was wonderful what a marked improvement there was in grass lands since the use of mechanically-made manures had become general. With regard to the best mode of applying these manures there were many opinions, but for cereals the best results were attained by sowing broadcast and ploughing in, whilst for roots the manure must be drilled with the seed, for it was necessary that the food of the root crop should be as handy as possible for their roots, they not having the power of sending them out to a distance in search of food which the cereals had. Up to the present, manure-drills had not been much used, probably owing to there not having been much stir made about them by the manufacturers of agricultural implements. There were now several kinds in the market, and the distributor made by Messrs. Garrett and Son did its work better than any he had seen, and as a broadcast distributor could not be too highly recommended, both on account of its cheapness, durability, and great saving of manual labour. Liquid manure drills were strongly recommended by some, and this was undoubtedly, theoretically speaking, the proper way to apply manure; but whether it answered practically was a question on which, perhaps, some gentlemen present could give his experience. As to the composition of the manures of different makers, he did not think any two manufacturers turned out manures of exactly the same appearance or chemical quality, and the general run of superphosphates did not contain more than 22 to 24 per cent. of soluble phosphate, very many not exceeding 18; although the best makers obtained 28 to 30, and were enabled to manufacture any quantity up to 40 per cent. It was worthy of note that in Germany low quality, and so called "cheap" manures were not in favour, and cheap manures were undoubtedly dearest in the end. Much stir had lately been made by some manufacturers offering for sale "Ammonia-fixed Peruvian Guano." The question arose whether the ammonia in guano was not naturally sufficiently fixed for all practical purposes, and he read an extract from Dr. Voelcker's reports of his experiment on this question, which showed that genuine Peruvian guano loses but an insignificant proportion (¾ per cent.) of ammonia by long exposure to air at the ordinary temperature, or by drying in a current of air of the temperatnre of boiling-water. The peculiar smell of guano was caused by a number of fatty acids derived from the fish-oil of the food of the guano birds, and the smell of a manure was no criterion of its value. The result was that the addition of sulphuric acid to guano for the purpose of changing the ammonia into a fixed salt was unnecessary. But there was no doubt that guano was improved by such an addition, because phosphates were rendered soluble; but there was also no doubt that manures

of such chemical composition as to be quite as beneficial to the plant, and more profitable, might be obtained at a less cost than guano which had undergone such a process. In conclusion he would like to put before them for discussion the question, "What is the best method and time for applying artificial manures to the land for cereals and root-crops respectively?" (Applause.)

The discussion was commenced by Mr. **Goodwyn Goodwyn**, who referred to Mr. Packard's statement that guano did not lose its ammonia by exposure to the atmosphere, he having, in common with many others, thought that guano ought to be covered up as soon as possible; as if not, it lost its effect. With reference to Mr. Packard's question, Why buy manure which was of no avail till the second or third year? Mr. Goodwyn said he understood the great recommendation of certain manures, such as rape-cake, &c., was that a benefit was derived from them for two or three years in succession. He agreed that if they could get manure, the whole effect of which would be felt in the first year, much cheaper than that the full effect of which was not experienced till the third, it would be better to keep their money in their pockets, instead of burying it in the ground; but whilst the cost was equal, he did not see that it was an advantage that the effect was exhausted in the first year. He expressed his desire to see artificial manure applied to clovers and grasses, which were, as a rule, neglected; and as to liquid manure, while admitting that theoretically the proper way to apply manure was in a liquid state, he pointed out that the expense was so great, that it was practically impossible, except by means of hose like that of a fire-engine. He understood Mr. Packard to recommend phosphatic manure for root-crops.

Mr. **Packard**: And nitrogenous for cereals.

Mr. **Goodwyn** asked what for grass?

Mr. **Packard** should say, as phosphoric acid entered more into their composition than any other element, that a phosphatic manure, combined with a small proportion of ammonia, would be suitable.

Rev. C. **Corrance** gave the results of some experiments he had made with artificial manure. He had tried, as recommended by Dr. Voelcker, three cwt. of common salt, and 1½ cwt. of nitrate of soda as a top-dressing for wheat, using it about Lady-day. In a few days the blades of wheat became of a more intense green. This year he had left a stetch to which he had not given this top-dressing, and the contrast was remarkable, several gentlemen having estimated that the difference would be two coombs an acre. Having used this manure through one course he meant to change it in another course. As to Swede turnips, they consumed a great deal of phosphoric acid in their early growth, and should be supplied with superphosphate of lime, which stimulated their growth to such an extent that the plants could withstand the ravages of the fly. Of course artificial manure would not take the place of farm-yar manure, and he advocated the use of both. He quoted som experiments of Dr. Voelcker on wheat, which showed salt an nitrate of soda to have greater effect than wheat manu Peruvian guano, or soot.

Mr. **Goodwyn** said he had found the consequence of the u of a large quantity of salt to be that the land would not wo He instanced a plot of ground which had been manured wi nothing but artificial manure for ten or twelve years, and whi had produced very good crops, but it had got to be like mud.

Rev. C. **Corrance** remarked that common salt by itself di not answer, nor did nitrate of soda by itself.

Mr. R. **Garrard** (Brundish) said he had always ploughed-i his artificial manure, never having used it as a top-dressing b once, when he sowed some guano on a piece of pasture had but directly after frost and snow came, and there appearing n effect from the guano, he attributed it to the frost and snow He always ploughed the manure in when he applied it for ro crops. It was impossible to grow the quantity of roots are grown without artificial manure, there not being enou natural manure made on the farm.

The **President** alluded to the difference between the so and the rock, its original form, and likened the earth to a bi of iron, the surface of which by exposure had become decom posed into rust. He also related an experiment he had com menced of applying guano to grass, pointing out the manner i which a scientific experiment should be conducted.

A discussion then took place as to whether manure expose to the weather lost its fertilizing properties, the general opinio being that it did.

Mr. **Smith** (Cransford) thought artificial manures ought t be ploughed-in in the autumn on heavy land, and sown in th spring on mixed soil or light land.

Mr. **Packard** then replied, observing that he could see n reason why frost should deprive artificial manures of any their fertilizing properties. Of course, seasons had great di on artificial manures and on the crops generally, as had bee shown by Mr. Lawes' experiment on the wheat crops in the se sons of 1853 and 1863, when they were as 17 is to 5¼. No doub theoretically the proper way to apply manure, especially to ro crops, was by means of the water drill, and it was worth the while of agriculturists to try experiments with it. As to Mr Smith's statement that heavy lands should be manured i autumn and light in spring, he should say the contrary, for heavy soils had more phosphoric acid than light. He also alluded to some other points which had been raised.

On the motion of Mr. D. Smith, jun., a vote of thanks wa passed to Mr. Packard, who expressed his willingness to under take any subject they thought he could do justice to, on future occasion.

THE WASTE LANDS OF IRELAND.

There is a conventional notion which we take to be not altogether incorrect, that an Irishman never sets himself so seriously to work as when he has bid farewell to the land of his birth. The very same man who would go lounging about his cabin from one year's end to another, with his hands in his pockets and his pipe in his mouth, will labour like a galley-slave in the Backwoods of America, or quickly become an example of patient industry, with the venue only changed from Dublin to London. And yet, in the face of this strange transformation, there would seem to be no country that should promise to pay a better return on the outlay of a little energy than the Green Isle itself. With a climate and a soil proverbially grateful, there are at this moment thousands upon thousands of acres of what may still be termed virgin land, awaiting the care of the cultivator. But upon these the Irishman fairly turns his back, seeking rather, like the knigh-terrant of old, to encounter difficulties abroad, than to engage himself on the less adventurous business of increasing his comforts abo home. With some unruly spirits the vicissitudes of new life will always have their charms, though it is har to understand how a whole people, as it were, should sys tematically slight the opportunities they have here, t brave in their necessity the uncertainties of elsewhere This state of things is, too, the more remarkable a amongst no nation of the earth is the love of country more deeply impressed than amongst the Irish. They quit their native land, when the hour does come, in t very agony of grief; while in however pleasant place their future lot may be found,

> "They'll ne'er forget ould Ireland,
> Though 'twere twenty times as fair!"

There should surely be but one solution to this enigma. If, as we are told, money be only the representative o labour profitably employed, then the productive lands of the Sister-Kingdom languish and lie idle from a lack of capital. But this is not altogether the case. There is money in Ireland, often enough wrung from the soil, but rarely returned to it. "The small farmers," says a correspondent, "have abundance of capital, there being fourteen millions in deposit, chiefly belonging to this class of the community, who will not spend money on themselves or their farms. In this respect, men here with from £800 to £1,000 differ from the farmers of England and Scotland. Here, when they save money by denying themselves the proper necessaries of life, they like to become proprietors, by purchasing a small farm, and then to turn 'gentlemen' or idlers. They have no idea of investing £10 or £12 per acre in improving the farms as farmers, and would think that if they laid out a sovereign in labour or manure they should never see it back again!" There could, of course, be no more pernicious plan of proceeding than that of which the outline is thus sketched. In England, there has been no such bar to improvement as the small owner or occupier, too often cramped alike in his means and his intellect, and who at the best just continues to go on as he has been going. But in Ireland, as we see, they soon reach beyond this normal condition. The small occupier becomes a small proprietor, and the small proprietor a small squire, or more forcibly, "a squireen," about the most ungrateful and unprofitable position any man can occupy. Looked down upon by the gentry, and certainly not looked up to by the peasantry, such a life, either socially or financially, is one long bitter struggle, and no wonder if under such circumstances those who lead it get dissatisfied. The children are too proud to work and too poor to be idle; the very labourers upon such properties are never half-employed or half-paid, and thus everybody and everything grows gradually more and more rusty, until the people seek through emigration that sustenance which they might under better auspices have ably earned on their own soil. Any measure of relief or remedy here can only be arrived at by encouraging the people of Ireland to trust more to themselves and to their own country. Strange as it may sound, money if only judiciously invested may be made to pay better at home than when carried across the seas, to the Colonies or the cheerless wilds of some unknown land. But then, to engage upon any such outlay, the Irishman must make up his mind to become as good a man of business, as earnest a workman, and as little of a fine gentleman, as he would be when he tried his fortunes abroad. In a word, let the old country only have fair play, and few of her children will find reason to forsake her. With the increasing facilities of intercommunication between the two countries, the great impediments to the development of Irish agriculture may be rapidly removed, as it is inspiriting to see how the inducement to do better is being encouraged amongst the people themselves. Thus the *Cork Daily Reporter* of only Wednesday last broaches the subject in this wise:—"When we find that in seven Poor Law Unions, containing most of the waste lands in Ireland, the Poor Law valuation of 1861 averaged from 1s. 2d. to 2s. 3d. per acre, the Glenties, in Donegal, and Belmullet, in Mayo, being the lowest, we conclude that, if these lands were let in farms of 30, 50, or 100 acres at the Poor Law valuation, or 99 years' lease, they would soon be taken and improved by the same class of our countrymen who emigrate to New Brunswick, Canada, Ohio, and New York, before whose industry the forests soon disappear, being converted into wheat and corn fields; their energy and hard work being repaid by the ownership, which they bought when unimproved, at a dollar or so per acre. We would be glad to see Mr. Bingham, of Bingham Castle, Mr. Carter, of Shean, the Law Life Assurance Company, the Marquis of Conynghame, Mr. Connolly, or other proprietors in these unions, setting the example of letting farms on 99 years' lease to those able and willing to improve, binding them to cultivate so that in ten years the whole farm would be crop land. The waste lands of Erris, Connemara, Donegal, and Kerry, as well as much bog and moor in the midland counties, would be soon reclaimed on such leases, and thus the bone and sinew of the country would be kept at home. More young stock would be produced, more oats and potatoes grown. Country towns would be benefited, and shopkeepers enriched, while the farmers and improvers of such lands would soon become a class of yeomen, so much wanted in Ireland." It is not our purpose here to very closely criticise these premises; or, for instance, to consider how far a 99 years' lease would go to create fixity of tenure; but rather, as we have said, to show the spirit which is manifesting itself across the Channel. Then, again, the *Sligo Independent*, in echoing our call for the establishment of a Board of Agriculture, and the abandonment of all unprofitable "agitation," goes naturally to the same object, the advance of agriculture:—"Considering the present state of the law in the three kingdoms—the present state of farming in each—such a Board would at once be able to state why the rich grass lands of Ireland rented so much cheaper than inferior lands in the Lothians. Norfolk and Northumberland can give so much employment and use so much manure, while the tenants of Scotland and England live like gentlemen, and the Irish the very reverse. Why is it that farmers in England without leases, and in Scotland with 19 to 21 years' leases, are great improvers, while the majority of Irish people are idle? There are fourteen millions of deposits in Irish banks. The merchants have about half-a-million and the landlords as much more, thirteen millions belonging to small farmers of 20 to 100 acres, and none to the graziers. Now, if we had a Board and Minister of Agriculture, such an anomaly could not exist. The bank of earth or the farm would be the deposit, which would pay 12 to 20 per cent. instead of 5 per cent. as at present, or 2 per cent. as a few years ago. We recommend to Lord Naas the improvement of our waste lands, the changing of our grass farms into tillage, and the appointment of a Board of Agriculture, with a Cabinet Minister at its head." It is rarely that we have met with anything more to the point than the extracts we have given, although these might be considerably extended already, as the Journals we have quoted are going thoroughly into the question, and asking that attention which will no doubt be given, no less by the Government than the landed-proprietors. Justice to Ireland, so far as we can interpret the cry, would seem to go for more justice and consideration from her own children. She has room, and more than room, enough for them all, if they will only go to work at home with that "will" and energy they display elsewhere.

EARTH WORMS.—The earth worm is not generally considered by practical gardeners and naturalists as an enemy to be extirpated from the garden. In fact, it is maintained that it renders great services to the gardener, and should not be interfered with. It undermines the soil in every direction, thus ventilating and draining it in a most efficient manner, and by drawing portions of decayed vegetable matter into its burrows supplies manure to the soil in a way which could not otherwise be accomplished.

THE ONE HUNDRED AND FIFTIETH ANNIVERSARY OF THE CASLON LETTER FOUNDRY.

The party, including a few visitors, numbered 220 persons, and met at the Crystal Palace. The following abridged report is from the *Iron Trade Circular* (*Rylands'*) of August 18.

After the usual loyal toasts, neatly proposed by the Chairman, Mr. H. W. Caslon, and the "Army, Navy, and Volunteers," had been replied to by Capt. Courtenay and Mr. Harry,

Mr. TUXFORD, of the firm of Rogerson & Tuxford, proposed the toast of the evening, "Continued prosperity to the Caslon Letter Foundry," and expressed the great pleasure he felt, as one who had for many years picked up type, in seeing before him, in the person of Mr. Henry William Caslon, an embodiment of the many associations connected with the old type founders, and the early history of printing. They were celebrating that day an unbroken reign of Caslons for 150 years. That house had been the royal house of type founding during that period, and although an invasion had been once attempted from Scotland on their territory—(laughter)—and a dangerous *emeute* had lately suspended their dynasty for three months—(laughter)—yet they all knew how their trade and art had finally triumphed, and how all the ancient power of the house, with a new accession of friends, and a connection larger than ever, had rallied round them. (Cheers.) The history of this house was indeed a remarkable one. Up to Queen Anne's time, and during the whole of the Augustan age of English literature, the printers of the writings of our poets and men of letters had to fetch their printing types from Holland. It was not until 1720 that a young fellow, hardly above the age of an apprentice, came to London from Hales Owen—in the Black Country—where he had learnt to engrave on steel for the gunmakers of Birmingham. Being expert in his craft, he soon found employment in engraving ornaments and cutting letters for the breech of a superior class of fire-arms. "I am only telling you the old, old story," said Mr. Tuxford, "working out the old moral — 'Whatever you do, do well.'" The letters thus cut by this young man, then unknown to fame, were of such elegant proportion, so conspicuous for the innate taste for beauty of shape—finished with that truth and loyalty, and that perception of fitness, which converts the craftsman into the artist, that they were shown to Mr. Watts, a printer of eminence of that period, who sent for him in 1725, and showing him specimens of several founts of Elzevir, inquired if he would venture to cut him some punches for letters to compete with those, then the best of their class. William Caslon courageously applied himself to the task, and, having obtained some small assistance in money to carry on his experiments, sedulously went to work, and accomplished that marked improvement in the form and make of type which has stamped him as the father of English typography. Now, let us consider the difficulties he had to overmaster. First, to attain to a knowledge of the theory and practice of an art by no means simple, for I can assure you the seriff of a letter and the fineness of a hair-space are in themselves mysteries; next, to acquire capital, and by prudence and economy, as has been well expressed, to emerge from that obscurity and poverty in which skilful artists are generally involved, entailing the consequence, too often, that their talent, useless to themselves, enrich their wealthy patrons; next, the training up of other workmen to assist him in minor details; the watching every branch of a manufacture so large and yet so delicate; the necessity for achieving, as an element of success—not merely equality with his rivals, but superiority over them in what for ages had been denominated excellence. (Hear, hear.) All this he did, and more. Yet he was no more than yourselves, the majority of my audience—a workman—and certainly with many less advantages. (Hear, hear.) He eclipsed all rivals: he satisfied his friends—no mean task, as we all know. (Laughter.) He gave to his country a new trade, and stands a monument of industry, energy, and perseverance to all succeeding generations of working men. He lived respected, attained position, and died in honour. Those who wrote his epitaph in later days could justly say that "perhaps few individuals were ever more amiable in private life; his liberality to his workmen—(Hear, hear)—his hospitality to his friends—(loud cheers)—and his general benevolence was distinguished." And this, which I see you have already applied in the right direction, brings me to what Mr. William Caslon succeeded in, beyond, and in addition to, casting these grand new letters—the establishing a great foundry, the obtaining confidence, the training of workmen, and the forming a trade and connection in a branch the most difficult of all to displace—he founded a family—(loud cheers)—equal to the old traditions, who would maintain the honour of the house of Caslon generation after generation, by supplying to its customers good type, good form, good metal, good workmanship, as well as exhibiting in every transaction honour in trade and honesty of purpose. In these respects we will all acknowledge there has been no depreciation. (Loud cheers.) Even the late contest—to which I refer with no idea of exciting unpleasant reminiscences, for, like Englishmen, when a fight has been fought out we cease to be enemies—there were some points which showed the old force of character that distinguished William Caslon. The broken connection ventured—the valorous resolve when called upon—that renewal of sympathies abruptly severed, of which I am now the pleased spectator. No thought can be pleasanter than that we are sitting d fellow-labourers in the same vineyard. Great is the jo such a harvest home! (Cheers.) Excuse this rough from a man who is only not one of yourselves because he had to use the weapons you have constructed. You will, I sure, unite heartily with myself and the other friends of the firm present in drinking continued success to the Ca Foundry.

Mr. HENRY WILLIAM CASLON rose, amidst a volley of cheers, to return thanks. After a feeling allusion to the cir cumstances of the day, and a thankful recognition of the ki terms in which Mr. Tuxford had spoken of their house, went on to say that such was the excellence of the founder the house, old William Caslon, in his profession, that he left his successors little to do but to follow out the exam and the advice he had bequeathed to them. He had taug them to keep up with the advance of the times, not to oppo its fashions, but to meet its wishes, improving whenever g taste, and the best means of workmanship and material, co be used to that purpose. From first to last, down to his h noured father and himself—his unworthy successor—no pa had been spared to meet the wishes of the trade, and acco modate themselves to its requirements. Of the advantages such a course they had seen instances in the return of th old connection, after being exposed to an inconvenience great—almost so insufferable—as the suspension of supp for a full three months. There was hardly another house the business that would not have broken down under such parenthesis of trade. (Laughter.) But their connection h returned to them, and he was happy to say was increasing. this case they were singularly fortunate, having been aided the circumstances of the time, for he had to mention the cu ous fact that matrices from punches originally cut by Willi Caslon in 1724 were now taken down for daily use after ha ing been laid aside since 1772 as obsolete, nearly fifty ye after their first invention; for with the returning taste for t beautiful in form—a necessary consequence of the gre popularisation of art in our times—the "old-faced type" h come to be regarded as the most elegant letters within t range of typography, the call for it being so large that th house had a difficulty in keeping up with the requirements their customers. Mr. Caslon concluded with thanking the one and all, for their kindness, and assuring them that he a those connected with him would use every effort to make about them happy and comfortable, so that no man who h once entered their house should desire to leave it. (Lo cheers.) Mr. Caslon concluded by giving the toast of "T Press."

Mr. **Tuxford**, in reply, said he rose because the gentlemen of the Press present seemed to be, on that occasion, gifted with more than the usual modesty of their order. (Laughter.) They were always ready to blow everybody else's trumpet but their own. Yet, surely, if ever there was a matter that deserved that power of description for which the Press of this country was so justly famous, it was such a celebration; for, without type, where would have been the Press? (Hear, hear.) To think of newspapers without letters, and those separate letters, would be like asking Adam to an evening party without previously sending him proper apparel. (Great laughter.) Why, in a forme of the *Times* (four pages) there were 600,000 letters; and where would these have been but for such men as Faust, Gutenberg, Schöffer, and Caslons? He who first invented writing gave to the mind of man power beyond the limits of the human voice, and must first have analysed sounds and expressed them by letters; but he who cut them into type, and reproduced them, led the multiplication of the thoughts of great minds to a still larger intercommunion of man with man. Mr. Tuxford went on to speak in very eloquent terms of the powers of the Press of this country, terms which were heartily recognised by his audience, but which we are not called upon to repeat here.

Mr. **Skipper** proposed, and Mr. **Sawell** responded to, the toast of "The Guests."

The meeting then broke up. The pleasant entertainment will be ever memorable as the Type-founders' Feast of Messrs. Henry William Caslon and Co.

SUGAR CULTIVATION IN ENGLAND.

When we regard the gradual introduction of beet sugar into so many European States, the question naturally occurs to us, how is it that in Great Britain alone, of all the great commercial nations, the culture of the beet should be unattempted? The European beet crop has now reached almost gigantic proportions, and this year amounts to no less than 600,000 tons. In France, the cultivation of the beetroot constitutes one of the most important and most remunerative articles of agriculture. An extent of land, equal to about 300,000 acres, is assigned for its cultivation; it keeps 468 manufactories at work; it gives employment to 70,000 hands, involving an expenditure of about one million sterling for labour each season, at a period of the year when more than at any other time employment is needed by the agricultural classes; it enriches the land in which the beet is sown, to the extent of at least 20 per cent., increasing the corn crops, and the number of the animals grazing on the pasture lands. In Austria, a country formerly dependent upon Holland for its supply of sugar, sugar cultivation is extending; and though the introduction of the beetroot dates only from the year 1830, there were, before the commencement of the recent war, 140 sugar manufactories at work, and employment given to 40,000 labourers of both sexes. Holland has recently entered on the same course, finding it profitable to cultivate beetroot sugar, even though she possesses sugar-producing colonies of her own. The great success of this trade in Prussia, the original home of beetroot sugar, and in the rest of the Zollverein, is well known. According to a statement in Mr. Baruchson's pamphlet, there are even in Spain as many as twelve manufactories devoted to the manufacture of beetroot sugar. It is somewhat curious that, whilst enumerating the various countries that are supposed to be favourable to this cultivation, Mr. Baruchson finds no corroboration for his statement in the most recent official report on the subject—the answers drawn up by the secretary of legation in Spain in reply to questions addressed by Her Majesty's Government last year, whether sugar were cultivated in that country. In this report no mention whatever is made of the existence of beetroot manufacture, and the reader is left to infer that the whole amount of sugar in that country during the previous year, 1864, 20,000,000 quintals, was produced solely from the cane plantations in the Spanish colonies, Cuba and Porto Rico, although it is well known that cane sugar is cultivated near Malaga.

There is not much perhaps that could be urged in praise of our fiscal system, but at least the cultivation of the beetroot, if once it were undertaken, is never likely to suffer from such capricious and arbitrary regulations as those which accompanied its development in France. The most important fact, in considering the sugar question in England, is that so far as cultivation goes, the beetroot is grown very largely all over Great Britain, and that the question of the extraction of sugar is not one of possibility, but of expediency. Mangold wurzel is nothing but the common field beet, and contains from 4 to 7 per cent. of sugar; and the question is whether it would be commercially profitable to extract this product instead of giving it to animals. In considering the matter practically, it must not be forgotten that the pulp left after extracting the sugar is used on the Continent for exactly the same purpose as the whole root is with us. The question therefore is simply whether the value of the sugar extracted from the root would not more than repay the loss of weight for animal feeding. Certainly, if we may judge by France, it would be profitable, for the French farmers in the last crop are stated to have made a profit of 33 per cent. The mangel-wurzel is not so rich as the Silesian beet, which contains about 10½ per cent. of saccharine matter. This plant is, however, simply a variety of the beet, and there is no reason why it should not be tried in England. In regard to the question whether the Silesian beet or the mangel-wurzel would be preferable, it is stated that the mangel-wurzel, though poorer in sugar, is more productive as a plant. In the north of France the produce of the beet crop is stated by Mr. Baruchson to be, for a good average, 40 tons of root per hectare, or about 16 tons per acre; and that gentleman also confirms M. Payen's assertion that 5,000 tons of root produce 300 tons of sugar and 60 tons of molasses. The experiment of growing beet for the extraction of sugar was tried some years since in Ireland, but was abandoned—we believe principally from the idea that beet-sugar could not, in the long-run, compete with cane. Since that time, however, beetroot has made immense strides; and the process has been so much improved that the yield from a given quantity of roots has been doubled.

The obstacles that at first sight seem to oppose its introduction into Great Britain do not appear to be either fiscal or physical. In venturing an opinion, however, on a subject purely economical, and in which the relative advantage of growing one crop or another is influenced by the value of land, or the price to be obtained by the crop, we speak under correction, and with the more diffidence as the question of its possible manufacture in this country has perhaps never been discussed by one in a thousand of our landowners. Apart from the value of the article itself, the collateral advantages are hardly of inferior consequence, in the employment it affords in winter, at a time of the year when labourers are plentiful, and in the benefit it confers upon the soil in which it is grown. In many of our English counties mangel-wurzel is so extensively grown that there would seem to be every opportunity for ascertaining the commercial success of this experiment; but in Ireland, circumstances would appear to be even more favourable to its growth. "The very circumstance," says Mr. Baruchson, "which is supposed to render Ireland not so fit as other countries for the growth of corn, makes it on that account peculiarly suited for the growth of crops which are cultivated on account of their bulbs, stems, and roots." Thus Ireland, which is subject to a greater amount of moisture than any other country where corn is grown, would seem adapted by Nature itself for the successful cultivation of the beet. It is even stated by some that the yield in Ireland would be at least half as much more per acre than in France, owing to the more favourable character of the soil, and the equally beneficial influence of a liberal expenditure of British capital. One special recommendation of the beetroot cultivation is, that there is no part of this plant which is not capable of being utilized in some way or other for the service of man. And in corroboration of our remarks, we point to the following striking passage from the able pen of M. Dureau, the editor of the *Journal des Fabricants de Sucre*, quoted by Mr. Baruchson in his pamphlet: "The beetroot, besides producing 200,000 tons of sugar in France, produces at the same time a mass of pulp beneficial to agriculture, which, excluding even all other food, is able to nourish, during one year, 50,000 head of cattle or 500,000 sheep. The manure produced by these animals, added to the other residues of sugar manufactories, can fertilize every year 20,000 hectares, or 50,000 acres. The 420 (since increased to 468) manufacturers now making sugar employ from 60,000 to 70,000 hands, representing an outlay of not less than £800,000 to £1,000,000 for labour during each season. The 300,000 acres on which the beetroot is now planted were once fallow grounds, or infertile soil. The crops of wheat, far from being diminished, have increased in an equal ratio. No other part of France produces more cereals than the north; and this is the very country where beetroot is cultivated to the greatest extent. Everywhere, after the cultivation of beetroot, the land has yielded one-third heavier crops than previously: thus, in manufacturing sugar, bread and meat are also increased, contributing largely to the public alimentation." The beet gave the basis for the succession of crops, which was before wanting in France; but as we have carried out this system for many years, the results on the land would not be so surprising as in France. Considerations such as the above are, however, of sufficient weight and importance to invite the earnest attention of all interested in the sugar trade and the general agriculture of the country. We do not pretend to give an opinion as to the practicability of making the extraction of sugar from the beet commercially profitable, as a result can alone be arrived at by actual experiment. It would, however, appear that the question is well worth the attention of our farmers.—*Travers' Circular.*

CLOVER HAY.

We have, for some years past, advocated the cutting of clover for hay at an earlier stage of its progress than is common in this country. The usual indication of fitness for the scythe is the browning of the blossoms to the extent of one-half or two-thirds; but it is by no means uncommon to leave it, under press of other work, much beyond those points. The consequence is, too great hardening of the woody stems, and a great and incurable damage done the quality of the hay by the rotting of the lower leaves. These fill the hay with that impalpable dust so distressing to horses, and, highly nutritious and valuable as otherwise it would be, makes it unfit food for them. We have urged, therefore, the harvesting of the crop when it has come pretty well into flower, without further delay. That this is the proper period for cutting, we may take a hint from the bees and other insects. When they begin to operate on the clover blossoms it is a sign that sugar has been elaborated. If the clover be not then cut, the sugar goes to perfect the seed, and is lost to the hay.

An experiment made some years ago by Professor Horsford seems decisive as to the point that it is to be cut neither before nor after the period of full development of bloom. He found that clover cut at the surface of the soil, when the heads just began to appear, produced only 0.80 per cent. of sugar. Clover cut when the heads were fully developed, produced 1.15 per cent. of sugar, very near 50 per cent. more than that cut first.

An important incidental advantage of the earlier cutting is that we get a week or more of time in which we may take advantage of the good weather, and so secure the crop with less risk of exposure to rains—a very desirable point. Hay cured thus early is more nutritious, more delicate, more apt to be well cured, and sooner out of the way of damage from exposure. It favours very much, too, the second or seed crop, by giving it the opportunity of getting well started before the excessive heats of summer.

Curing the Hay.—Green clover contains, when first cut, from seventy-five to eighty-three per cent. of water. It contains also a certain amount of sugar, which is easily fermented. Therefore, if cut and placed in a barn or stack, should fermentation be produced, it will destroy the sugar and other nutritious qualities, and vinegar or acid will be produced, rendering the hay sour and unfit for food. If sufficiently dried, the sugar will remain with the fibre, and the hay will be nutritious, wholesome food for stock, and supply the animals with not only food, but an element (carbon) which will generate animal heat. It will, from this view, be seen how important is a proper curing of the hay.

No rule can be given as to the length of time which clover should be allowed to dry in the sun and air before it is put up, because much will depend upon the previous condition of the weather, the dryness of the ground, and the quantity of water the clover may contain, but a point should be made of not having the leaves destroyed by too much drying in the sun. In favourable weather, a few hours' wilting is sufficient before putting it into small cocks, which, after standing a day, may be thrown open and taken at once to the mow. But the process of curing demands especially the eye of the master, and no advice can be implicitly followed. It must be matter for the exercise of his own good judgment.

Value of Clover Hay.—While every one knows, and is quite familiar with the fattening qualities of a clover pasture for stock of every description, clover hay is poorly appreciated. There is no doubt that this is because it is generally so badly cured and imperfectly preserved. It is harder to cure than the common hay grasses; is fit to cut when there is much more liability to rains than later in the season; and it cannot be properly preserved in stacks or ricks out of doors. A large portion inevitably rots, and the remainder is more or less damaged.—*Baltimore Sun.*

AN ENGLISH PEASANT'S COTTAGE AND ITS TENANT.—It seems to me that all the world over there is nothing more pleasant to look upon—on the outside at least—than an English peasant's cottage. There is a home charm about it which the dwelling of the labourer in any other part of the world that I am acquainted with has not. Mr. Birket Foster, the first painter of English idyllic life we have had, is never tired of representing it for us. It may be of red brick, or of timber, or of clay, or of stone, but it is always thatched, with high-peaked, thick, warm roof, and the windows look out upon you through the moss-grown eaves, like kindly eyes from beneath a rugged human brow. And it stands in its own little patch of garden ground, where summer after summer the old familiar flowers bloom, which have died out of our gardens now, but which Shakespere loved. It has its own little croft, its cluster of fruit trees—"almost its own sky." Perhaps a large elm overarches it, sprinkling the wind-blown shadows over roof and road, a counterchange of light and shade; and just by, where the stile leads off from the highways through pastures, the ground makes a dip, and you look out upon a stretch of blue country—beyond the distant farm with its range of russet stacks, and the massive square church tower, where the rest of the village clusters, and the village labourers who have finished their day's work on earth are resting till the Master shall call them for their wages. This is the outside view of things. But as to the inhabitant of this paradise? Well, in the first place he is a machine. Now there are other living machines, spinning and weaving in our factories and elsewhere. But in these human nature sometimes rebels against its bondage, and the man breaks out at intervals into some wild excess, after which he returns to his mechanic toil as before. But in the case of the farm labourer, human nature seems unconscious of its degradation. The brain has been conquered by the muscles, and he works on from year's end to year's end—shall we say contentedly?—in the same mill-round of monotonous toil. His only intellectual amusement, poor wretch, seems to consist in listening to sermons, which he requires to be loud, and hot, and strong; for he is a little deaf from exposure, and rather phlegmatic, and slow to be roused. He may give you the appearance of dulness, but he is wonderfully sharp and shrewd, nevertheless, in things which concern his immediate interests, all the little brains he has being concentrated thereon. He is thankful for small mercies and little kindnesses, and rather suspicious as to the motives which induced them, as he finds it hard to believe in disinterested benevolence. Patient to a marvel, he has learnt one great secret of life—endurance. After a sort, he is religious too, but not devotional. And death is almost lovely in his eyes, even though it were annihilation: that which he enjoys above all things being rest after long toil.—*Macmillan's Magazine.*

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Monthly Council: ***Wednesday, August*** **1, 1866.**—ent, Mr. H. S. Thompson, President, in the chair; Earl of Powis, the Earl of Shrewsbury and Talbot, Chesham, Lord Vernon, Major-General the Hon. N. Hood, Sir Massey Lopes, Bart., M.P., Sir T. tern, Bart., M.P., Mr. Bowly, Mr. Cantrell, Colonel loner, Mr. Barnett, Mr. Brandreth Gibbs, Mr. Hol- M.P., Mr. Jonas, Mr. Randell, Mr. Rigden, Mr. rt Smith, Mr. Wells, Professor Wilson, Mr. Frere, Dr. Voelcker.

e following New Members were elected:—

Brown, Arthur H. C., Kingston Blount, Tetsworth.
Grantley, Lord, Wonersh Park, Guildford.
Greenwell, Thomas, 43, Old Eliot, Durham.
King, George, East Haddon, Northampton.
Vane, Sir Henry Ralph, Bart., Hutton Hall, Penrith.

ance.—Major-General the Hon. A. N. Hood, of the Committee, presented the Report, from appeared that the Secretary's receipts during month had been examined by the Committee, Messrs. Quilter, Ball, and Co., the Society's nts, and were found correct. The balance in ds of the bankers on July 31 was £1,825 0s. 1d. port was adopted.

nal.—The following list of subjects was recom- d for Prize Essays for 1867:—

County Essay, Huntingdonshire, £25.
County Essay, Leicestershire, £25.
rming Customs and Covenants existing in England,

On the Result of Ploughing in Green Crops for Manure e crops best adapted for the purpose, £15.
Land Drainage and Improvement by Loans from Go- nt or Public Companies, £25.
The Drainage of Grass as distinguished from Arable £10.
How far the Rearing and Management of Poultry on an y farm are capable of improvement and profitable ex- £10.
The best Treatment of Affections of the Bladder amongst g Sheep and Lambs, £15.
On the Latest Improvements in the Construction of gs for the Labouring Classes, £20.
Short History of Rise and Progress of Herefords, £25.
Any other Agricultural Subject, £10.

se.—Major-General the Hon. A. N. Hood re- that the Committee had received from Mr. Fowler, chitect, plans and estimates for the alterations as ted by the Council. They submitted Mr. Fowler's , and it would be for the Council to determine to what steps may be taken relative thereto. An ment to the report was moved by Mr. Randell and d by Mr. Holland, M.P., that there be no altera- de in the house; but this was negatived, 3 votes ng given for it. The adoption of the report was moved by Colonel Challoner, seconded by the Earl wis, and carried unanimously; the alterations to be in accordance with the plan C, the whole to be out at once under the supervision of the House mittee at a cost not exceeding £870, and the Coun- be authorised to advance £500 as the work pro-

eam Cultivation Enquiry.—Lord Vernon, chair- stated that the Committee recommended that the wing instructions be issued for the guidance of mem- of the Steam Cultivation Inspection Committees.

On receipt of instructions from the Council to visit any particular district, they will be furnished with—

1. A list of all the farms in the district where steam-cultivation has been adopted.

2. A selection from the list of farms to be inspected, and the replies received by the Society from the owners of steam-cultivation implements to the schedule of questions addressed to them. Although the Inspection Committees are not to consider themselves precluded from inspecting a farm which is not on their list, on being satisfied that there are sufficient reasons for doing so, it must be their object to limit themselves as nearly as possible to the number of days allotted to the districts assigned to them. In order the better to accomplish this they will be at liberty to omit inspecting any of the selected farms which, from information received, they may consider not to possess any especial interest, more particularly if distant from their main route. In either case they will be expected to report to Hanover Square their reasons for deviating from the prescribed list.

3. The enquiry should be specially directed to the following points:—

- i. The cost per acre, the depth and nature, including the various items of expenditure for each kind of work.
- ii. A special investigation into the age of the machine and the amount paid annually for repairs, stating the nature of breakages, and their causes.
- iii. How far the adoption of steam-cultivation has assisted the drainage of strong lands, how far the cropping of the farm has been changed by the adoption of steam cultivation—more especially to what extent autumn cultivation has increased the growth of green crops, and how far the productiveness of the soil has been increased by steam-cultivation.
- iv. The number of working days on which the engine power has been used for the purpose of steam-cultivation on or off the farm.
- v. The number of days in which it has been used for other purposes on or off the farm, stating the nature of the work done, daily cost and amount charged when let on hire.
- vi. The number of days lost by breakage and other causes.
- vii. In the case of steam-ploughs, &c., let out for hire, to ascertain what loss of wages occurs from the non-employment of the men, this being an item of expense against the apparatus.
- viii. The consideration of the economical supply of water for steam-cultivation.
- ix. The economical mode of arranging and forming roads and headlands for steam-cultivation.

4. In the exercise of the power thus given to the Inspection Committee of deviating from the list of selected farms, they are requested to keep prominently in mind that one of the main objects of the enquiry is to obtain a report of the comparative results obtained by the use of different kinds of steam apparatus, the different systems of cultivation adopted, and especially their adaptation to large or small farms, and any other points which they may consider to be deserving of notice.

5. The Report of the Inspection Committee to be made within a month after the completion of the inspection of a district.

This Report was adopted.

The President presented the Report of the Committee on the best mode of filling vacancies in the Council:—

1. That a standing Committee shall be appointed, to be called the Committee of Selection.

2. That the Committee do consist of the President, the Chairmen of the Finance, Journal, Stock Prizes, Implement, Country Meeting, and Chemical Committees, with six other members to be added by the Council.

3. That it shall be the duty of such Committee, previously to the periodical expiration of the term of appointment of the

President and of those Members of Council who retire by rotation, and also on the occurrence of any casual vacancy in the office of President, Trustee, or Vice-President, or in the Council, to meet and report to the Council any circumstances which, in their opinion, ought to be considered at the time when such vacancy is filled up.

4. That all nominations of persons proposed to be elected to fill such vacancies shall be referred to the Committee.

5. That, without attempting to establish any exact equality between the different districts into which the country is divided for the purposes of the annual meetings, the Committee shall endeavour to secure not less than three members of Council from each such district in which 400 members of the Society reside.

6. That the Committee shall consider it an object of importance that of the ordinary members of Council, as nearly as may be, one half shall consist of tenant-farmers.

Mem.—That in filling up the existing vacancies, which the Committee recommend shall not be done until November, the attention of the Council be called to the fact that in districts A and C there are 472 and 502 subscribing members respectively, and that each of these districts is at present represented by only two members of Council.

This Report was received and adopted.

A letter from the Royal Veterinary College, on the subject of experiments connected with the Cattle Plague was referred to the Journal Committee.

An application from the Royal Hawaiian Agricultural Society, for a copy of the Society's Journal, was acceded to.

The Council having granted the usual leave of absence to the staff, adjourned to their monthly meeting on the 7th November.

THE TRADE IN ANIMALS.

The Select Committee appointed to inquire into the manner in which the home and foreign trade in animals by sea and railroad is conducted, and to report what regulations, if any, should be enforced with a view of improving the treatment of animals in transit, and to prevent any introduction and spreading of infectious or contagious diseases among them, and who were instructed to inquire how far it is desirable to prevent, restrict, or regulate the slaughter of animals in the metropolis and other populous places, have considered the matters referred to them, and have agreed to the following report:

TRANSIT.

Foreign cattle and sheep are imported into England and Scotland from Spain, Portugal, France, Belgium, Holland, Schleswig, Denmark, and Sweden, and various parts of Europe.

Cattle and sheep are also carried by sea from Orkney and Shetland to various ports in Scotland, and from Scotland and Ireland to England.

At present, cattle can only be landed at ports approved by the Customs' authorities. The chief ports for foreign cattle are—Liverpool, London, Harwich, Hull, Newcastle, Leith, and Granton; for Irish cattle, Glasgow, Silloth, Morecambe Bay, Liverpool, and Bristol. The Scotch cattle are chiefly taken to Liverpool and London.

The sea-borne cattle arrive generally in good condition. The vessels are, with some exceptions, specially fitted up for the purpose, and have divisions for every four or six animals, windsails, or other means, to secure ventilation, and in some cases shelter for the cattle on deck. The cattle, however, in well-ventilated vessels appear to suffer from the want of a free current of air when these vessels are coming up the Thames, or are waiting for the tide to discharge their cargo, as at Newcastle, Hull, Bristol, and Leith, where the cattle cannot be landed at all states of the tide.

The animals carried between decks are usually tied with their heads to the sides of the vessel, though the best mode is to tie them with their heads to the centre, because this latter method affords greater facility for feeding and watering, and for good ventilation. The Irish store cattle are brought over loose.

There is no rule respecting the numbers put on board, but, with the exception of some cases in the Irish and Bremen trade, the vessels do not appear to be overcrowded.

It is in evidence that in Ireland much injury arises to cattle from bad treatment received from drovers, and that cattle landed from Oporto and Spain arrive in a better state than those from Ireland.

In the voyage from Oporto each animal is allowed space to lie down, and is fed with compressed food and watered; in other cases the animals are packed close to one another so as to prevent their lying or being shaken down, and sometimes are neither fed nor watered until landed.

The animals are chiefly made to walk on and off board, and the practice of slinging is nearly abandoned.

It has always been the practice to cleanse the ships, more or less, after each voyage, and recently disinfectants have been used.

On the railways cattle are often overcrowded and badly treated, especially in Ireland; and are carried for 36 to 48 hours without being fed or watered.

It is bad for the cattle and troublesome to untruck them, while there is some difficulty in watering them while in a truck —a difficulty, however, which is not insuperable.

A journey, whether by sea or rail, causes cattle to deteriorate in value, and makes them feverish, and tends to produce, if it does not actually cause, the foot-and-mouth disease. These evils are very much increased if cattle are ill-treated or not properly watered.

Since the recent Orders in Council the cattle-trucks appear to have been properly cleansed as far as possible. Possibly the floors might be constructed so as to admit of a more thorough cleansing than is at present practicable.

Your Committee are of opinion that it should be made imperative upon all railway companies or steamboat proprietors who are engaged in the carriage of animals to thoroughly cleanse and disinfect the trucks, steamboats, and pens used by them after every journey or voyage, and that provision should be made under Government superintendence for the proper ventilation of all vessels employed in carrying cattle by sea, and also that similar provision should be made with respect to the vessels employed in carrying cattle from Ireland and Scotland.

The laws relating to cruelty to animals might be often enforced with advantage in the case of both vessels and railways.

HOME TRADE.

If London and other large towns could be supplied entirely with meat killed in the country, a great deal of the traffic i cattle, and consequently a great deal of the chance of spreading infectious diseases, would be avoided.

London and other large towns can, except in hot weather, be supplied to a great extent with dead meat from a distance; and frequently country-killed meat, though not so good-looking, is better, and keeps longer than town-killed meat.

At present the cost of sending carcasses by rail is larger than that of sending live cattle; but, with proper arrangements, the cost of carriage might be diminished.

If animals are slaughtered in districts which are thinl peopled there is great difficulty in disposing of the offal, which does not bear the expense of carriage. It would be a loss t a farmer in such districts to be obliged to send his cattle t distant markets, dead instead of alive, and to the poor of London and large towns, who are great consumers of offal, and wh would be deprived of it if those places were supplied by dea meat only.

The trade generally object to a dead meat system; they s that the supply is very irregular, and that prices are only kept from violent fluctuations by the live meat market.

Moreover, while admitting that the general demand is tolerably uniform, they say that their individual demand varies—that they can only meet this irregularity by buying cattle and keeping them alive in their own lairs to slaughter when required.

Many butchers and contractors who supply the suburbs of London are dependent for their meat on the metropolitan markets. If they could only obtain dead meat at these markets it would be impossible to supply meat in as good a condition as they do at present.

Your Committee are of opinion that it is not possible at present to dispense with a live meat market in the metropolis and other large towns.

Both in London and in the provincial towns butchers of the suburbs or neighbouring places have been in the habit of purchasing cattle in the live markets and removing them to their own premises, and keeping them there until required for slaughter. These persons have suffered great inconvenience and extra expense by the recent prohibition of such removal, by the Orders in Council made in consequence of the cattle plague.

There does not seem to be any general desire permanently to restrain the general home trade in cattle, but your Committee recommend that the Metropolitan Market should be confined to animals intended for immediate slaughter; and that all animals exhibited therein should be branded, and not allowed to be exhibited for sale in any other market, but should be slaughtered within ten days, and that, subject to this regulation, the animals might be moved so as to allow butchers to take them to their own places and slaughter them.

Your committee do not recommend that any permanent restrictions, other than those above suggested, should be placed on the home traffic in cattle. That they are of opinion that the wilful exposure for sale in a public market of animals suffering from infectious disorders, such as rinderpest, sheep-pox, pleuro-pneumonia, or glanders, or the knowingly driving such animals upon the public highways, or conveying them upon railway or boat, should be rendered an offence punishable in a summary manner; and, if necessary, a bill to effect this should be introduced into Paliament.

The great inconvenience of cattle-driving in the streets of London and other towns arises partly from cattle being driven to the live-meat markets, and partly from cattle being driven from those markets to private slaughterhouses.

The live markets are not unhealthy in themselves, nor are slaughter-houses, if properly kept, though they usually attract several trades which, in crowded localities, are injurious to public health.

The private slaughter-houses are occupied by two classes—carcase butchers and retail butchers.

The carcase butchers kill animals for the purpose of selling them wholesale in the dead-meat market. This slaughering could be carried on at a public slaughter-house adjoining the live market as well as at private slaughter-houses; and if this were done the number of cattle driven through the streets would be very much reduced, and the noxious trades which are connected with them would be removed.

The slaughter-houses of the retail butchers stand on a different footing. Their abolition would cause great hardship to many butchers who have slaughter-houses adjoining their shops, and can slaughter animals as they require them under their own superintendence.

For the public interest it would be advisable as far as practicable to adopt a system of public slaughter-houses, and in all cases slaughter-houses should be placed under regulations and proper inspection, as is the case at present in some of the provincial towns; and your Committee are of opinion that power should be given by a general Act to local authorities to acquire land for the erection of slaughter-houses, and to make regulations respecting them.

That the system of inspection at present existing in the city of London should be extended to the whole metropolitan district, although no entirely satisfactory inspection of meat can be carried out until meat is killed in specified public slaughter-houses.

FOREIGN TRADE.

The importation of foreign cattle is very important; for, as the home supply of cattle is reduced, the importation tends to keep down the price of meat; and it appears impossible to supply dead meat from foreign ports to any but a very small extent.

The introduction of disease is, to a great extent, prevented by the system of inspection, which makes importers careful to send sound animals. The inspection is at present carried out effectually, though the accommodation at some wharves is deficient.

Diseased animals are slaughtered, but the rest of the cargo is sold, except in cases of rinderpest, when the whole cargo is slaughtered. Store stock affected with foot-and-mouth disease are, in some cases, detained until cured.

Inspectors cannot discover undeveloped seeds of disease in an animal, and therefore, with the view of preventing the importation of disease from abroad, many persons are desirous of placing store cattle in quarantine, and of maintaining the present regulation as to slaughtering fat cattle at the port of discharge within four days from their arrival.

The compulsory slaughter of all foreign cattle at the port of discharge, under the recent Orders in Council, has prevented the importation of any store cattle or sheep (which was an increasing trade), much to the detriment of the Scotch farmers, who have been unable to stock their lands, and has diminished the importation of fat cattle, a trade which would otherwise have increased.

The temporary inconvenience of insufficient accommodation for slaughtering at the wharves could no doubt be removed, but the evil of causing a large amount of additional slaughtering in large towns, as Liverpool and Hull, is more difficult to deal with.

Compulsory slaughter at a port, like compulsory slaughter at a market, is more expensive to the butcher, hampers the trade, and will diminish the importation and raise the price to the consumer.

Your Committee recommend that all imported fat cattle should be subject to the same rule as English fat cattle when exposed in a market—that is to say, marked for the slaughter within a week, and not allowed to be exposed in any other market.

That the Privy Council shall declare any country in which they have reason to believe the cattle-plague is existing to be an infected country, and to prohibit the importation altogether of animals therefrom, or to declare that such importation shall only take place at certain ports, and that animals so imported shall not be taken into any market, but be slaughtered at the port within four days of their being landed.

Besides the general question of slaughtering at the port of discharge, it was suggested that there might be a separate market for foreign fat stock in London close to the wharves, and that foreign stock might be excluded from the Metropolitan Market, or on the banks of the Thames.

The plan would prevent the chance of introducing infection from foreign cattle into the Metropolitan-market, and would stop the inconvenience of driving cattle through the streets from Blackwall to Copenhagen-fields, many of which are brought back to Whitechapel.

It is objected to by Dr. Letheby, by several inspectors, and by nearly all the butchers and salesmen, who alleged that the separation of the home and foreign markets would be inconvenient, would decrease the competition, and tend to diminish the importation, while by giving additional trouble to the butchers it would increase the price, and would "give an unfair advantage to owners of English stock."

Although to some extent one class of butchers purchase foreign and another class English fat cattle, yet there are many who purchase both. The separation of the markets would exclude these men from one or the other market.

Such a separation of the two markets seems, therefore, undesirable. The evil of the cattle-driving in the streets might be much diminished if the cattle were landed lower down the river than at present and brought up by rail, while this course would also bring the cattle in better condition and allow of better accommodation at the wharves.

The chance of infection will also be much diminished if the Metropolitan Market were made exclusively a fat-meat market, as in that case all the cattle would be, according to our previous recommendations, killed within the ten days.

It seems desirable, when practicable, in large towns to separate the fat and store cattle markets.

Any system of quarantine will require extensive accommodation at the port of arrival, and in some cases (as Liverpool and London) there will be great difficulty in providing this.

The objections urged to any system of quarantine are the expense, the interference with trade, and the deterioration of the animal during the quarantine, while it is said that the animal might catch the disease from the place where it is quarantined. A quarantine would, no doubt, act as a tax on importation, and if it did not stop importation altogether, would diminish it, and raise the price to the purchaser.

It is alleged, on the other hand, that a purchaser would gladly pay an increased price, as he would have a kind of warranty of the soundness of the animal; but it may be doubted whether the quarantine furnishes an adequate security that the animal is free from disease.

The only disease for which quarantine appears to be at all reasonable is the rinderpest.

Where counties like Spain or Denmark are not only free from rinderpest, but are not a channel for the exportation of cattle from infected inland countries, there seems to be no reason for a quarantine for cattle exported from them.

Your Committee are of opinion that a permanent department of the Council-office should be appointed to keep up communications with the Board of Customs and Her Majesty's Consuls abroad in order to have accurate accounts as to the existence or otherwise of cattle-plague, upon whose recommendation the Council could, if they thought fit, order a quarantine or impose such restrictions upon the trade in animals as circumstances might appear to them to justify.

July 19, 1866.

The Committee was originally thus constituted: Mr. Milner Gibson, Lord Naas, Viscount Cranborne, Sir James Fergusson, Mr. Edward Egerton, Mr. Goschen, Sir Morton Peto, Mr. Graham, The O'Conor Don, Sir Matthew Ridley, Mr. Cogan, Mr. Carnegie, Mr. Dent, Mr. Holland, Mr. Hunt, Mr. Leader, Mr. Banks Stanhope, Mr. Graves, and Mr. Norwood. The names of Mr. Alderman Solomons and Mr. Wilbraham Egerton were subsequently added to the Committee.

Amongst the witnesses called were Mr. C. Sewell Reade M.P., Mr. Seymour Clarke, Mr. W. Valentine, Dr. Letheby, Mr. Giblett, Mr. W. Slater, Mr. J. Bannister, Mr. J. Sea, Mr. R. Herbert, Mr. W. Torr, Mr. T. M. Hudson, and Mr. J. Druce.

RUSSIAN EXPERIMENTS IN VACCINATION FOR RINDERPEST.

The Department of Agriculture is in receipt of a report of experiments made by a committee appointed by the Russian Secretary of the Interior, at Bondarewka and Salmysche, relative to the protection afforded to cattle by vaccination for rinderpest. It was communicated by the Russian Minister, through the Department of State.

Experiments of a similar character were initiated, in accordance with the suggestion of Professor Jessen, of Dorpat, in 1852, with results so various and indefinite that the Government determined further and more thoroughly to test the virtues of vaccination. Accordingly, an appropriation was made of ten thousand roubles annually, for three years, and a committee appointed, on which was Professors Jessen, Rawitch, and Roynoff, with instructions to continue experiments in three established institutions for vaccination. This was in 1858; but active operations did not commence till 1860, and then only at two points in southern Russia—Salmysche and Bondarewka—under the immediate superintendence of Veterinary-surgeon Kobuscheff at the former place, and of Surgeon Sergeeff at the latter. These experiments continued through four seasons.

The results, though still various and in some respects conflicting, are interesting and instructive. They show certainly the different degree of susceptibility in different breeds, and the loss or destruction of the vitality of the vaccine virus with age. The wide difference in severity and fatality, noticed in the two series of experiments, is readily suggested by the fact that matter from two to nine months old was principally used at Bondarewka.

At this place, in 1860, fifty-eight cattle were vaccinated, nine were very sick, and three died. In most of these cases, the matter was from five to nine months old. Re-vaccination of thirty-seven with fresh matter resulted in the sickness of five, of which three died.

In 1861, two hundred and fifty-seven were vaccinated inside of the institution, and two hundred and twenty outside. Of the former, only five were very sick, one hundred and seventy-seven were slightly ill, forty-two had some symptoms of the disease, and but one died. About half of those outside had the disease in a mild form. In one experiment, two animals were vaccinated with slight effect, and afterwards took the disease naturally, notwithstanding vaccination, and both died.

At the arrival of the commissioners in 1863, two hundred and ninety-five had already been experimented upon by the Veterinary-Surgeon Sergeeff, of which fifty-one had slight symptoms, one hundred and thirty-six had some cough and epiphora, thirty-three remained well, and seventy-five were not observed by the inoculator.

In three years, Sergeeff vaccinated 1,028 animals, but used old vaccine matter, except in forty-five cases, of which seventeen took very sick, and four died. The loss of contagious power in old matter is shown, further, by experiments of the commissioners upon twenty-one of Sergeeff's subjects with fresh matter, of which nine took sick, and four died. In another case, sixty-five head were tried with fresh vaccine matter, and thirty-nine were severely affected, and nineteen died—an unusual degree of fatality at Bondarewka. Matter from one to nine months old was tried upon fourteen animals, all escaping infection; but upon re-vaccination with fresh matter, ten became sick and three died.

In one experiment, two sheep were infected, and matter taken from them was used successfully in infecting six cattle; all were sick, and all but one died.

Vaccinated animals were frequently exposed to contagion with impunity, unless in cases in which the symptoms were comparatively mild.

In 1860, the whole number vaccinated at Salmysche wa 64; 36 took sick after the first vaccination, and 13 died; th other 28 were again vaccinated, of which 16 sickened and died. Of the other 12, 10 were a third time vaccinated, an 4 a fourth time, with only one animal in each case slightl affected. Of the whole number (64), 53 animals were i fected, and 20 died. No milder effect was produced by vacci matter "of the fifth generation." Of three animals vaccinat with matter of the second generation, two were infected a one died, while four animals died out of seven infected wi matter of the fifth generation. In most of these experiment matter over twenty-five days old had no effect.

In 1851, there were 151 vaccinated, of which 69 remain well, 89 had slight symptoms of disease, 43 had it severel and twenty-four of them died. These 69 and 4 others slight affected were re-vaccinated, 43 of which sickened, and died. Of 27 vaccinated the third and fourth time, 14 to sick and 8 died. In these experiments, some that were slight sick at the first vaccination died as the result of the second.

Some died after the third vaccination. Matter more th nine days old was found inefficient.

In 1862 (the third year), there 51 deaths from 130 i fections out of 167 vaccinations. It is a noticeable fact th of two breeds, the Baschkir and the Kirgis, less than a four of the latter became slightly sick, while about two-thirds the former experimented upon were infected, and more th one-third of the whole number died.

Of 466 cattle vaccinated by Veterinary Surgeon Kobusch at Salmysche, partly under supervision of Professors Jess and Roynoff, from October 1, 1860, to July 5, 1863, 379 we infected, and 148 died. Thus about 80 per cent. of all to the infection, and more than 30 per cent died.

In the experiments of the commissioners in 1863 are a fe noteworthy features. In the fifth experiment, four anima that had been vaccinated without effect were left to take the contagion naturally; all became diseased, and three died. In another instance, several animals mildly affected by a former vaccination were vaccinated with fresh matter without effect. Again, in several cases, animals that had once had the disease were exposed to contagion with impunity.

Ten sheep were exposed to contagion, and five were vaccinated without effect; and they encountered subsequent exposure unharmed.

It will be seen that in one location, and that in which the greater number of fatal cases occurs, ten sheep were entirely unaffected, while at the other station two were vaccinated successfully and matter of extraordinary potency obtained for further experiments upon cattle.

CONCLUSIONS.

These results, more voluminous in the official documents, have been translated in the department, and a brief synopsis, is here given, in the hope that some insight into this mysterious disease may be gained.

The following is a translation from the journal of the committee of their conclusions upon certain points, in view of the results of their experiments:

1. Is the rinderpest similar to the abdominal typhus of a human being, and to what degree?

The rinderpest must be considered as a contagious typhus, *sui generis*, as well in its clinical as anatomical pathological appearance, and is very similar to the abdominal typhus of the human being, but different from the same by its rapid course and the constant complication of catarrh in all the mucous membranes.

2. Is there any evidence that the rinderpest has its origin only or principally in the steppe countries of Russia, and that it was transferred thence to the other provinces of the country?

The rinderpest was brought from the steppe countries, but the place of its origin is not yet known. Therefore there is no positive evidence on hand to decide this question.

3. Are there any localities in Russia where the rinderpest began spontaneously?

Considering the reports on hand, there are places in the northern part of Russia where the rinderpest was developed by itself; but this assertion is difficult to prove, because no scientific examination has been made in these places concerning this question.

4. Is the rinderpest only contagious by direct contact with the infected animal, or through miasmatic propagation?

The rinderpest is contagious as well by direct contact with the sickly or dead animal as by its exhalations.

5. Is the rinderpest alike contagious in all parts of Russia, and is the mortality the same everywhere?

The rinderpest is less contagious in the southern parts of Russia, and less fatal there in comparison with other regions of that country.

6. Does the season influence the contagion of the rinderpest?

The rinderpest is less contagious in summer and winter than in spring and fall.

7. Are certain breeds of cattle more disposed to rinderpest than others?

Not all breeds are alike disposed to contagion. The experiments at Salmysche and at Bondarewka have shown that the Kirghis and south steppe breeds are less disposed to contagion than others.

8. Do all cattle of a herd take sick at the outbreak of the rinderpest?

This is the case sometimes in the northern part of Russia, but hardly ever in the southern part.

9. Is the vaccine matter of the rinderpest mitigated by successive generations of the disease?

Some cases have been very favourable to mitigation, but the latest experiments have shown that no mitigation of the effect of the vaccine matter took place even in the fifteenth generation. Therefore, in accordance with these results, mitigation of vaccine matter of the rinderpest cannot be expected. (Professor Jessen is against this conclusion.)

10. How long does vaccine matter of the rinderpest preserve its power of contagion, and has old vaccine matter the same effect as fresh matter?

The experiments made so far have not produced any positive results in determining the length of time that vaccine matter will preserve its vitality. In some cases the vaccine matter lost its effect in several days, but in others it maintained the same after eleven months. It is therefore remarked that the duration of the effect of vaccine matter depends considerably upon the manner of preservation. Experiments have shown, as far as the difference in effect between fresh and old vaccine matter is concerned, that vaccination with fresh vaccine matter generally causes a severe sickness, but vaccination with old vaccine matter a slight illness, and in some cases that it is without any effect.

11. Does vaccination of the rinderpest always preserve the animal from a repeated attack of the plague?

Animals which show strong characteristic marks of the rinderpest after vaccination certainly will not again contract the disease, but those which show light symptoms of the sickness after vaccination are not always safe from a repeated attack.

12. How long can an animal be considered safe after being vaccinated?

The results obtained do not render it certain how long this immunity will last; perhaps it will extend through the whole life of the animal, but our experiments only reach up to six years.

After reading the opinions of the president and of the members, Jessen and Rawitsch, concerning the question of what resolutions the committee should adopt in regard to vaccination in the rinderpest, the committee resolved:

1. To discontinue the vaccinating institutions at Bondarewka and Salmysche.

2. To publish a report of the vaccinations of the rinderpest in Russia in the Russian and French languages.

3. To request the Government to make the necessary appropriations to the veterinary institutions of the Government for making further investigations of the rinderpest and other epidemic diseases of animals by experiments, and by sending skilful veterinary surgeons to epidemic localities.

4. The Government has no right to recommend the introduction of the vaccinations of the rinderpest as a preservative against the extension of the same in accordance with the established results of the experiments. Yet the committee permit the owners of cattle to establish vaccinating institutions in the steppe countries after having obtained the consent of adjoining neighbours, but in such places only as are remote from cattle roads, and upon condition that the institutions are superintended by skilful veterinary surgeons. They must also be erected in accordance with the plan adopted by the director of the Central Veterinary Institute.

5. All veterinary surgeons are obliged to make reports to the director of the Central Veterinary Institute of their experiments in vaccination of the rinderpest.

MARKING SHEEP.—The following directions we copy from the *New Hampshire Mirror*:—The advantages of having every sheep in the flock marked with plain figures, such as can be easily read even across a common sheep-yard, are too obvious to every one to need any argument in its favour. The best materials for marking we have ever used are *red lead* and *pure japan*. This mixture will work equally well whether you use iron or wooden types. Many try Venetian red, which looks very well at first, but it soon rubs off and the figures become obscure. Others, again, when using japan, mix boiled linseed oil with it, but this is wholly unnecessary. The lead mixes no better with it than with the japan, and as the latter dries more quickly, the number is not so likely to get rubbed and blurred. The best dish to mix them in is an old fashioned "flat tin," such as our grandmothers used to bake "Johnny cakes" in before their open fires. Into this put a few spoonfuls of lead and as much japan as is needed to mix with it, so the mixture shall be about the thickness of West India molasses. This spreads out over the bottom of your tin, and is just the right depth to cover the surface of your type; hence there will be but little loss. When properly applied we have seen the figures on the darkest Merinos showing themselves with the clearest distinctness round to the end of the year. The marking should be done soon after shearing, and when put on, the sheep should be allowed to go directly from the hands of the marker into an open lot, to prevent them from huddling together and obscuring their numbers by rubbing against each other.

DR. HITCHMAN ON THE BREEDING OF STOCK.

J. Hitchman, Esq., M.D., chairman of the committee of the Derbyshire Agricultural Society, read an elaborate paper upon the "Breeding and Form of Stock" to the members of the society in the Lecture Hall, Derby, some time since. The lecture was admirably illustrated by a collection of drawings, to which frequent reference was made.

Dr. HITCHMAN commenced by noticing the increasing demand for meat on the one hand, and our diminishing resources on the other, and gave a few interesting statistics, showing the enormous demand for London alone. A gentleman wrote some time ago a brilliant article in the *Quarterly Review*, entitled "The London Commissariat." He made a careful calculation that, supposing all the oxen required for a year to be coming along the Great North Road, and the sheep on the Western Road at the same time—and he himself on a pillar at Hyde-park—at ten abreast, the last animal of the herd of cattle would be seventy-two miles away, and the driver goading his shrinking flank considerably beyond Peterborough. And of the sheep, at ten abreast, on the Western Road, he says, "The shepherd at the end of the flock, and the dog that is worrying the last sheep, would be just leaving the environs of Bristol, 121 miles away, as the first ten would pass him at Hyde-park Corner."

This is the requirement of London alone, with its population of three millions, while there still remains 16,995,000 persons in other parts of England and Wales to be supplied by the British farmer, or his rival in other lands.

Dr. Hitchman then proceeded to point out, by the aid of his drawings, the strange changes brought about in breeding in the colour, form, and habits of the rock dove, the almond tumbler, the carrier pigeon, the pouter, the fantail, and adduced them as interesting facts, showing how an arbitrary and artificial standard had been resolved upon and realized and maintained. Again, aided by drawings, the lecturer graphically pointed out the great contrast between the heads of Bakewell's Longhorns and M'Combie's Polled or Hornless cow, the mountain ram and the Leicester sheep, the Irish pig and the English sow, and other specimens, and stated that the tendency is ever to revert, to go back to the original form.

How have breeds been founded? Why has Charles Colling's "Hubback" (the grandsire of the bull "Comet"), picked up in a lane, or the "Godolphin Arabian" (the maternal grandsire of "Eclipse), purchased from a water-cart, become the fountain-head to which cattle-breeders and horsemen desire to trace up the pedigrees of their stock? Why were they selected, but because they possessed, in a marked degree, most of the very best qualities which were desired in ox or horse, and because the purchasers believed and acted upon the idea that "like begets like;" and if "like begets like" in good qualities, why not in the bad? "Like begets like" in the bad equally, if not, indeed, more surely than in the good. Malformation in a vigorous animal is often handed down to his progeny for generations, even if none of his known ancestors possessed the fault; but it rolls on with fearful power if the defect be an hereditary one.

If the individual animal possess great vital energy, his characteristic form will be stamped on his progeny. Thus in the "Philosophical Transactions" of 1813, and in "Thomson's Annals of Philosophy," vol. ii., there is a description of a new variety of sheep, as follows: "Seth Wright, who possessed a small farm on the Charles River, about sixteen miles from Boston, had a small flock, consisting of fifteen ewes and one ram. One of these ewes in 1791 produced a singular-shaped male lamb. Wright was advised to kill his former ram, and keep this new one in place of it. The consequence was, the formation of a new breed of sheep, which gradually spread over a considerable part of New England; but the introduction of the Merino has nearly destroyed them again. This new variety was called the Otter, or 'Ankon' breed. They are remarkable for the shortness of their legs and the crookedness of their fore-legs, like an elbow. They are much more feeble and much smaller than the common sheep, and less able to break over low fences; and this was the reason of their being continued and propagated." This fact proves that an individual animal starting a defect may propagate this defect, although descended from a race without such peculiarity. Where, then, is the wisdom of selecting an animal which possesses few of the qualities we desire, but which comes before us with the magic of a name, and surrounded by the artificial halo of a pedigree?

As regards the form of the head, I attach great importance to a large, wide forehead, and a somewhat short face, in all cattle intended for grazing purposes. There was a very fine specimen of a head in the yearling bull Bushire 2nd, bred by Mr. Leek, and sold for forty guineas at Mr. Cox's sale. The head of that young animal was a model, and, I was going to add, alone worth the sum for which the fine fellow was sold. Animals with the forehead wide between the eyes, and expanding well out also in the upper portion of the skull, are more intelligent, and therefore more manageable, than animals having narrow or convex heads. It is the index to coarseness everywhere, and often the index, too, of a bad constitution—what we should term rickety or scrofulous in the human subject. Size and strength are not identical in living tissues and structures: the small bones of the gazelle and the chamois, supporting them in dashing leaps from crag to crag, are natural illustrations of how strength may be condensed in the small bone. The large bones are full of cells—are porous, so to speak—and bear about the same relation to small bones as the branch of the pithy alder tree does to the dense and compact stem of the oak. It is pleasant to find very strong testimony on this point by one of the most successful graziers and cattle-dealers that England has ever known. Mr. Culley, who realized a very large fortune by the purchase and sale of feeding-stock, writes thus: "For I aver that no large-boned animal will feed so quickly, or cover so readily and thickly with fat flesh, as one with a small bone, if well formed. This is the criterion, this is the main principle that we found our judgment upon, respecting all animals which are to be fatted for the support of mankind; and we can justly say that this judgment is confirmed by nearly forty years' experience."

Well, having for the most part dealt thus far with evi- points, what may be considered good ones? In the bull, the head should be well set upon a broad, deep, muscular neck; the horns short, and not too bright; the ears long, and situated near to the head, the inside skin having an orange tint. The forehead should be broad at this point, with somewhat concave appearance between the eyes—the eye themselves large, mild, lustrous, and prominent. The butche knows if he finds the eye of the calf protuberant, and by ele vating the eyelids sees fat underneath, that the protuberanc is caused by fat in the socket; and if it be found in quantity here, it is a fair criterion that it is well diffused in more im portant points. A fine flesh-coloured muzzle, with nostril well dilated; the neck, as said before, broad, deep an muscular; the shoulder-blades well set toward the rib behind and yet stretching up finely towards the "crop," leaving n deep hollow between it and the ribs; chest deep; ribs wel rounded, and stretching backwards to the hook-bone, so as t leave no very wide space there. The breadth between th "hook-bones" should be proportionate to the length from them to the point of the fleshy rump, and the tail wel set on; the forelegs should be broad and muscular from this point upwards; the thighs well developed, an touching each other inwardly to near the hock; the ski covered with thick, soft, somewhat curly hair, and should be t the touch, when the animal is in a store condition, soft, elastic and pleasant; but when the animal is fully fat (how ever soft the hair), the skin itself should be very firm resistent to the pressure, like to the feel of a strained, well distended air-cushion. The bones should be as small as i compatible with the full, steady support of the animal. I the cow we everywhere expect greater roundness of form, softer touch, wider hips, and a more delicate outline. In bot a graceful carriage and lively air are desirable. Such I co ceive to be the perfect animal. Some one has said, "Th perfect monster the world never saw;" but to this we aspire at our shows, and the "prize-taker" is, or ought to be, the one which possesses the above points in the greatest perfection. However, practically, if there be a deep chest, a round rib, a broad loin, a mellow skin, and small bones, you have a beast which will repay your care, whatever faults may be found by the coinnoisseur in other parts of the animal's structure.

The lecturer then proceeded to consider what are the best principles of management. In other words, how we were to proceed to obtain animals of good colour, good form, prolific character, and sound constitutions, and condemned the system of breeding from young animals. And after a very interesting reference to the best colour of cattle he said: I am as positive as I am of my own existence that a uniformity of colour, as unvaried as any other class of animals, could be secured in process of time, if breeders were unanimous in determining upon one of three—namely, red and white, pure white, or red. So long as roan, which is a compound colour, is determined upon, so long will it be a matter of the greatest possible uncertainty what the actual colour of the progeny may be. Certainly roan is a very beautiful colour, and the variety which it leads to makes a herd of shorthorns a most picturesque object in the parks or meadows of a nobleman; but still this variety detracts from its dignity as a tribe, and lessens its effect when viewed as a herd in the stalls or grouped for sale in the market. This uniformity may be effected, because even now there is a kind of unity amid all this variety; for, if we cannot determine what the colour of the future calf will be, we can at all events predicate what it will not be. We know it will not be entirely black, or have any patch of that colour. Black, or anything approaching black, would taint the fair fame of the shorthorn, as assuredly as would a woolly scalp, a flat nose, a protuberant lip, and a dark skin in her progeny sully the honour of a Virginian lady. Perhaps there have been more good Shorthorns of a white than of any other colour, although it is now very unpopular—unpopular, because it betrays dirt and it is difficult to keep unsullied; and erroneously unpopular, as implying weakness of constitution. It is as hardy as any colour. Stick to facts and not to fancies. In what colour does nature robe the animals which spend their lives amid the regions of eternal snow? What is the predominant colour in the Arctic hare, the Esquimaux dog, and the Polar bear? Of what colour are the body ends of nearly all feathers, especially the feathers of all waterfowl occupying cold latitudes? What colour has instinct and experience alike sanctioned as the proper one to husband and preserve the heat of the human body? Let no man condemn white colour in his ox as a sign of "nesh." A white cow may be "nesh," but the same cow would have been as "nesh," or "nesher," if she had been of any other colour.

After noticing the peculiar predominance of the characteristics of the male sex, he said that, coupled with another great truth, viz., the dominance of faculties impressed upon and handed down through several generations, it will be found to be true in the main that in crosses it is better to seek the "constitution" from the dam, and the quality and form from the sire, than the opposite. Referring to the custom of close breeding, which the lecturer thought had produced the best animals he had seen, the lecturer explained drawings of such animals and recounted the high value set upon them by eminent agriculturists. In forcible and eloquent terms Dr. Hitchman enforced a proposition that the Royal Society should furnish its members with accurate portraits of winners of the gold medals of the society, and passed on to point out that the great thing to be avoided is breeding from a diseased, deformed, or defective animal; a hereditary taint becomes by close breeding frightfully confirmed and difficult to eradicate. The lecturer concluded by further enforcing the following propositions:

1. That man has been endowed with the means of controlling and modifying the forms of all animals.
2. That such modified forms can be handed down to the progeny; but, being departures from the primitive or natural type, the form can only be maintained by assiduous attention on the part of the breeder.
3. That not only because the qualities of the male can be immediately brought to bear upon larger numbers, but also because of his own special endowments, it is best to seek for improvement of form and quality through him.
4. That qualities both of the form and also of the character become hereditary in proportion to the frequency of the repetition in past generations, but that it is dangerous to breed from any animal with important defects, however high its pedigree.
5. That healthful, well-formed animals, without hereditary taint, even if closely related, may be safely permitted to propagate their kind, provided the practice be not continued through many generations.
6. That young animals, for their first impregnation, should be placed to the best of their own kind, in order to avoid the reappearance of stain in any future progeny.
7. That science has not revealed any trustworthy arrangement by which the proportion of the sexes can be determined upon and secured.

THINGS A FARMER SHOULD NOT DO.

A farmer should never break up more land than he can cultivate thoroughly; half-tilled land is always growing poorer, while well-tilled land is constantly improving. A thrifty and prudent farmer will not devote his sole attention to the improvement of certain fields on his farm, because the land is "easy to work at," and let other portions of his premises go uncultivated, and grow nothing but brush, bogs, briers, and stones.

A farmer should never have more cattle, horses, or other animal stock than he can keep in good order. An animal in good order at the beginning of winter is already half-wintered. Nor should he let his cattle endure the chilling storms of winter in an open yard or field, whilst a few dollars expended in the way of making comfortable stables would amply repay him in saving of fodder, and afford a greater amount of milk.

A farmer should never depend too much on his neighbours for what he can by careful management produce on his own land. He should not make it a common practice to either buy or beg fruit while he can plant trees and cultivate them on his own ground—nor annoy his neighbours by borrowing tools to work with, while he can make or buy them. "The borrower is servant to the lender."

A farmer should never be so immersed in political matters as to neglect doing his various kinds of work in due season, and to snug up matters and things for winter; nor should he be so inattentive to politics as to remain ignorant of those great questions of national and state policy which will always agitate more or less a free people.

A farmer should not be continually borrowing his neighbour's newspaper, while he can easily save money enough, by curtailing some little extravagance, to subscribe and pay for one or more of his own.

A farmer should never refuse a fair price for anything he wishes to sell. I have known men to refuse a dollar and a half for a bushel of corn, and after keeping it for five or six months they were glad to get a dollar for it. I have known farmers refuse to take a fair marketable price for their dairies of butter, and after keeping it three or four months they concluded to sell the butter for only two-thirds of the price which they were first offered. "A bird in the hand is worth two in the bush."

A farmer should not allow his wood-pile to be reduced down to the "shorts," merely drawing a little by piecemeal, and green at that. He must expect to encounter the sour looks of his wife and family, and perhaps be compelled (in a series of lectures) to learn that the man who provides green wood to burn in the winter, has not mastered the first rules of domestic economy. Nor should he employ some "botch" mason to build his chimney "upside down," so that his family will be nearly smoked out of the house, and the walls of the room become as yellow as saffron.

A farmer should not let his buildings look as old as the hills, and go to decay, while he can easily afford the means to keep them in good repair; nor should he allow tattered clothes and old hats to be stuffed in the windows, in the place of glass. If he does, he need not be alarmed if he acquires the reputation of a mean man, or one who tarries long where liquor is sold by the glass.

A farmer should not be contented with dilapidated-looking fences on his farm, so as to tempt his cattle to become unruly and destroy his crops, while he has plenty of opportunities and materials to make or keep them in repair.—*American "Working Farmer."*

THE FRIENDS AND FOES OF AGRICULTURE.

The usual monthly meeting of the Ballymahon Farmers' Club was held on Tuesday, the 3rd July last, Captain King Harman in the chair, when the following paper was read by Mr. **Alexander Crawford Kingstone**, of Mosstown, on "The Friends and Foes of Agriculture":—The subject you have chosen for this day's meeting is one of comprehensive extent, and of deep interest to every one of us. I am not competent to bring the subject in an adequate manner before you; but at your desire, following the good example of each of my predecessors at our monthly meetings, and trusting in your kind indulgence, I propose to read a selection of facts and observations taken from various sources. Many of the animals indigenous to this country, whether quadruped, bird, or insect, are found in their habits at one season to be injurious, and at another beneficial. It is of great importance to the farmer to make himself thoroughly acquainted with the habits of all those animals that are supposed to be so injurious to the crops, and to study their instincts at all seasons of the year. This knowledge enables him to check their injurious practices, and to encourage their beneficial ones. The weasel destroys the eggs and young birds of the poultry-yard, but it also overcomes the rats and mice, whether in the granary or stack, and these do no good at all to the farmer. The rook and hedge birds devour grain at the ripening of the crops, but in the season of rearing their young especially they destroy myriads of the insect tribe. All insects are not injurious to the farmer; on the contrary, many are positively beneficial. The lady bird destroys multitudes of the aphides, which injure many useful plants and trees, while the lady bird itself does no injury at any time. The song birds cheer our hearts in spring; they also devour large numbers of insects and snails, and when in autumn they delight to feed on ripe fruit, we can protect it from their depredations by the use of simple safeguards. Among the quadrupeds of injurious habits are the wild cat, the fox, the weazel, the stoat, the marten, and the pole-cat; some of these are well known by us; others are scarce, and, perhaps, not known in this country, though more abundant in our sister island. The stoat and the weazel are sometimes confounded with each other, but the stoat may be distinguished by its having a black tip to the extremity of its tail; it is a somewhat larger animal than the weazel. The stoat in colder climates becomes white, and is then called the ermine, but the tip of its tail remains black. The weazel has a short tail, the extremity of which is never black. They may be taken with spring traps. Although there is but one acknowledged species of British rabbit, there are four varieties of the animal which can be distinguished by the practised eye, namely, "warreners," which always remain in and about the warrens; the fur of this variety is the most valuable; "parkers," which leave the warrens and take up their abode in the open grounds; "gipsies," called also "hedgehogs," have no fixed abode, but travel tinker-like from place to place, and are, like those wandering smiths, usually but ill clad. "Sweethearts" are the ordinary tame rabbits: their fur is of little value. Whether these varieties be the result of successive generations indulging in similar habits, or whether they may be merely eccentricities of conduct in certain individuals, is rather doubtful; the fact, however, exists. The rabbit, when left to its own unrestrained devices, is, of the four-footed animals, one of the worst foes to agriculture, but one which, nevertheless, may, with proper management, be rendered a very considerable source of emolument, and thus may be transferred into the rank of the friends of agriculture. There is not in all the class of animals called game one which does half of the harm to the farm that is done by the rabbit. The hare will eat her track, but the rabbit is always nipping a little corn here and there, and prevents its coming to maturity for acres together. Grass land is similarly eaten, trampled, and injured by numerous paths. To swede turnips and carrots, to wheat and barley, to seed fields they do an amount of damage for which the farmer is scarcely ever compensated. They breed also with such rapidity that they are the source of continual inflictions, which are not confined to the eating of green crops, and so damaging subsequent grain crops of the farmer, but also extend to the burrowing in seed fields and amongst corn and turnips, and in the banks of streams, and of open fence dykes, and by scraping down mould, checking the flow of water, and injuring the drainage of the land. When rabbits find their way into a well-stocked garden they do very much mischief in a few hours; they eat away the young and tender plants, vegetables, and flowers, nibble off the tops and new shoots of shrubs, and in default of better food, or even in sheer wantonness, will bite away the bark from the fruit trees, and leave it lying in flakes upon the ground. In the nursery and young plantations they eat the topmost shoots and bark of young trees; but mice, rabbits, and hares detest the smell and taste of tobacco, therefore it may be used as a preventive. Mix strong tobacco-water (i.e., water in which the roughest and coarsest tobacco has been boiled) with clay, cow-dung, or other substances to make it thick and adhesive; some add a little glue and lime; stir the mixture till it is about the thickness of paper hangers' paste, and with a brush apply it plentifully to the bark, working it well it into the crevices all round the tree for three feet from the ground; or use common coal-tar—gas-tar—with equal portions of cow-dung and lime; but with very young trees or young branches the coal-tar may do injury; or mix soot and milk till it becomes like thick paint, and apply with a brush on a dry day; or try lime-wash; some of these may be useful to prevent horses, deer, or even goats from injuring the bark of ash and other smooth-bark trees. Small branches of thorn dipped in gas-tar and pushed into rabbit holes, where not numerous, will have the effect of driving away the rabbits. The operation may have to be repeated, and the mouth of the hole should be stopped with mould, and tramped firmly after the tarred bush had been pushed in. The gun, the ferret, and the net, the pit-fall, and other traps are useful preventives against the excessive increase of rabbits. But "if you would have rabbits, and only profit, without suffering from their natural propensities, keep them in inclosures, and provide them with well-sheltered huts; the hutches should stand on dry ground and be well ventilated; if sloping, so much the better, as this allows the wet to run, and let there be tanks placed in front to receive it: when mixed with straw it is valuable as manure. There were two very extensive breeders some years ago in England; one of them kept a stock of between three and four hundred, sending three dozen weekly to the London market. The manure produced was one load per week, and two loads were sufficient to manure an acre. This manure was sold at the rate of six pence to eight pence a bushel. I am not certain how many bushels go to a load, but I think thirty. Valuing the rabbits sent to market at nine pence each, we have a result of £1 7s. for them and £1 for dung, besides the manure made by the urine mixed with straw, which was valuable for home consumption. When wanted for sale the dung must not be mixed with litter, but kept pure. This gentleman did not include in his calculation such rabbits as he used at home for the table." (See *Richardson.*) In such cases we may count the rabbit among friends. Next comes before us the well-known timid hare, a pretty, picturesque object in the park, and when not too numerous, also in the field; in the sportsman's view a well-found object for his gun, or for the hound: one who has been a means of yielding us an occasional hour's recreation in the bracing air, the open field, and in cheerful company. The timidity of the hare is proverbial. A full-grown hare has been taken off her form with the hand from behind whilst the dog has pointed at it in front. It is a common belief in some parts of the country that if you place your hat in front of one you may walk behind it and take it with your hands; this looks like the saying, "Put a pinch of salt on a bird's tail and you can catch it;" but an author of much experience in country matters says, "We never tried this experiment, but have no doubt of its truth, and that it arises from a degree of fascination, under the influence of which the animal has its sole attention fixed upon the object in front, and has no power to extricate itself from the danger that threatens it behind." A boy, while tending cattle, heard loud screams in a neighbouring plantation; on his running to ascertain the cause, to his astonishment he beheld a magpie standing on the back of a hare almost half-grown, picking out one of its eyes, the other having been torn out before the boy's arrival. It has been observed in coursing that if a hare, when she is started from her form, has her ears down she is a weak runner, but if one of her ears is carried erect the hare generally beats the dogs. But at present the hare comes before our notice with reference to our cultivated crops. In this respect it is one of the foes of agriculture: when allowed and encouraged, it multiplies to an excessive degree, and commits serious injury. In the neighbourhood of large preserves as many as three hundred hares have been seen feeding one morning upon a field of wheat; where they are not numerous some of the preventives may be used that were mentioned in reference to the rabbit; painting gate-posts and palings a white colour, at intervals, will in some degree scare them. Of all four-footed vermin, rats and mice, with their varieties, are the greatest foes to the agriculturist, and to man generally. There are three kinds commonly known as a nuisance to the farmer and the merchant—the indigenous black rat, the common brown rat, or Norway rat, and the water rat; but the last is seldom a true rat, for what is usually known as water rat is not a rat at all, but an animal of a kindred genus, properly to be called vole—a water vole. The most formidable is the brown rat, said to have come from Norway, and since then to have nearly extirpated the black rat. Waterton says the brown rat came from Germany, and calls it the Hanoverian rat; others say the brown rat was imported into Britain from Persia and the East Indies, about the year 1730, and has since spread over the whole of Europe and America. The Albinæ, or white rat, is rare, and merely an accidental variety of the brown. They are all equally mischievous and resemble each other in their habits, so that the same mode of destruction will answer for all; for this purpose traps and poison are used, both equally good under certain circumstances, and of each there are endless varieties. There were exhibited in London about 200 different kinds of vermin traps; I believe they are still to be seen in the gardens of the Royal Horticultural Society, at South Kensington; they were there in June, 1865. Steel spring traps, when used with skill, and occasionally, not constantly, are very effective. Stephens relates a feat of rat-killing performed by a Yorkshire man, John Fetherstone, who, with twenty-one small spring traps, kept by him very clean and bright, in one day killed 385 rats. He bargained for a penny a rat and his own food. He occupied two days in preparations, so that in three days he earned in money £1 12s. 1d. In setting traps the operator should disguise the natural odour of his person by rubbing between his hands each time a little malt, impregnated slightly with a mixture of equal parts of oil of rhodium and oil of carraway; one part of the mixed oils to 5,000 parts of malt. This is one of the most attractive baits for rats, and may be used either in baiting traps or as a vehicle for using poison. An effectual and safe poison for rats is the phosphorated lard, the formula for which was communicated by the well-known chemist, Dr. Ure, to the Royal Agricultural Society of England. Take one pound of lard in a large wide-mouthed bottle or jar, plunge it in a vessel filled with water, heated to about 150 degrees Fahr.; wait till it is thoroughly melted, then pour in one pint of proof spirit or whisky, and one ounce of phosphorus (some say ½ oz.); cork the bottle firmly, take it out of the water and shake it until the whole mass becomes of a milky white colour, and quite fluid, without any knot or streaks in it. If the ingredients should not mix properly, place the bottle in the hot water again, and repeat the process till the operation is satisfactorily completed. Lay the bottle aside to cool, and the phosphorated lard will form itself into a hard white mass, while the spirit lies clear on the surface, and can be poured off for use on another occasion. When required, take out a portion of this compound, mix it with flour, adding some sugar, and flavouring it with oil of rhodium, oil of aniseseed, or such attractive odour; make this dough into pellets, and lay them for the rats in their holes and runs. Some persons do not use lard or dripping, but use instead of it starch, the phosphorus being added just when the starch is formed into a jelly with hot water; then stirring it up with a wooden spoon or a flat stick. Phosphorus is a dangerous substance to handle; it should never be touched with the fingers, nor cut in the open air; it should be kept in water, and cut under water. The safest plan for one not accustomed to handle phosphorus is to get the druggist to weigh it. Rat poison should be laid in the evening, before dusk, after the poultry have retired to roost, and any portion not eaten during the night time should be taken up at earliest dawn. Instead of flour and sugar being used with the above compound of lard and phosphorus, some use fresh malt, and add the following as an allurement to the rats:—oil of rhodium 1 scruple, oil of carraway 1 drachm, oil of lavender 5 drops, oil of aniseseed 10 drops, tincture of musk 2 drops: this is to be added to the compost in the proportion of 10 drops to the ounce. If kept in a well-stopped bottle, and a bit of bladder tied over the stopper, it will retain its strength for a length of time. To keep rats from corn stacks shake a handful of the following mash on every second course up to the easing, when building the stacks:—Dissolve 1 lb. nitre and 1 lb. alum in two quarts of spring water, put two pints of this liquid into a mash of about a bushel of bran, and mix. It is said that putting garlic in the bottoms of stacks will protect the stacks from vermin. Sir H. Davy is said to have recommended carbonate of barytes 2 oz., mixed with grease, 1 stone; it produces great thirst, and death immediately after drinking. Carbonate of barytes, or arsenic, mixed with chopped rabbit flesh, or with a salt herring, is given by some. Oil of amber or ox-gall in equal parts, added to thin oatmeal and flour sufficient to form a paste; divide it into little balls, and lay it in the middle of the apartment infested; lay several vessels of water close by; mix intimately 1 stone plaster-of-Paris (in its unslaked state) with 1 stone oatmeal; place it within reach of rats and mice: the moisture in their stomach will cause the plaster to set, and speedily produce death; begin by giving pure oatmeal; mix 2 oz. of dried oatmeal with 12 drops oil of aniseed; give this one night; the next night, 1 oz. dry oatmeal, 1 oz. linseed meal, 1 oz. bread crumbs, ½ oz. moist sugar (don't touch it with your hands); stir all together with a wooden spoon; when this is put together dry, add 2 oz. quick lime, and well mix together; put this on slates in the places most frequented; and at a short distance place several flat vessels holding about a pint of sweetened water; powdered squills, 2 oz., strong smelling cheese, 8 oz.; mix and place in their haunts: it acts immediately. Waterton, when on board ship, adopted the following expedient:—He caught a rat in a box-trap, and dipped the hinder parts in warm tar; then let him off: the others then took themselves away. A singed rat let go into the holes about the house is said to have a similar effect for a time. Also coal-tar smeared about the mouth of their holes, where such a noisome remedy can be adopted. A house where they frequent, or a room, should be carefully shut up, and kept still; lay in it a plate of oatmeal, or even flour, for several days, adding as it becomes nearly finished; when well habituated to be fed on this, sprinkle arsenic over it; the rats will unsuspectingly eat it, and die, which they would not do if it was given at first. In some extensive premises where rats have increased to vast multitudes, special buildings have been constructed for the purpose of capturing and killing them. Such a building was erected in Limerick by Mr. John Russell; it is described by *Richardson;* in it as many as seven or eight hundred have been killed at one clearing. In the lofts where straw was kept, on the same premises, the rats became very numerous, being fond of straw, and cutting it into short pieces with their teeth, and rendering it useless for the purposes it was required. The proprietor tried the effect of putting a pet fox to mount guard on the lofts, and found that he killed such quantities of the rats, the fox looking fat, contented, and happy with its new occupation, that three or more foxes were procured to garrison the place, instead of one. The late ingenious Robert Paul, of Starston, in Norfolk, the inventor of the turnip-fly trap and other curious modes of destroying vermin, constructed on his farm a building that he called a rattery. By this contrivance he effectually cleared his own premises, and also largely benefited his neighbours. Figures and descriptions of it and of the turnip-fly trap are given in *Loudon's Encyclopedia of Agriculture.* Two or three ferrets, kept on the farm-yard premises, will do much to banish rats. The ferret should be well fed, otherwise he will not return when he has driven out the enemy. Weasels are destructive of rats, but will also kill fowl and steal eggs. Cats should be encouraged to frequent the barns, and the out-houses. They should be regularly fed: then the cat hunts best, because then it hunts for sport, and not being pressed by hunger, will watch at the same spot for hours. Being in stout condition, from its daily wholesome food, it feels itself strong enough to encounter any vermin, and will destroy numbers in the course of a day. A starved cat, on the other hand, which hunts for food, eats the first prey it catches, and gorging itself lies down to rest, in accordance with the natural habits of the feline race to which it belongs. The great use of a cat is to kill or scare away, not to devour vermin. A good means of preventing the lodgment and breeding of vermin about farm offices is to build up the tops of all walls of stables, cow-houses, hammels, and other houses, beam filling between the legs of the couples with stone and mortar, keeping the mortar from contact with the timber. The walls of the old, as well as the new, houses should be thus treated; the walls of barns, granaries, &c., should be plastered smoothly and whitened, especially at the corners, from floor to roof. These precautions act as hindrances against rats and mice running up to escape: a smooth triangular board or slate placed across each corner near the top of the wall is sometimes useful. Rats are thirsty beings; and if a stack be built on well-made staddles, and a colony of rats should contrive to get into it by means of a stick or a tool left carelessly leaning against it, forming a bridge over which the rats can run, even under these circumstances they may be dislodged by drought, either by waiting for fine weather or by placing a rick cloth over the stack. The rats would speedily die of thirst in such a locality, and are obliged to jump to the ground in search of water, when, of course, they are unable to make good their admission afresh. Mice, however, cannot be dislodged in this simple manner, as they find sufficient supply of water in the dew that collects upon the thatch, and may be seen in the early morning poking their little red heads out of their holes, and licking up the dewdrops that hang glittering upon the straws. On board a man-of-war rats have been known to consume a hundred-weight of biscuits daily, and when, to destroy them, the ship has been smoked between decks, six hampers a day have for some time been filled with their carcases. The Isle of France was once abandoned on account of their immense swarms. In Paris rats are very abundant in the sewers near the markets and slaughter-houses. Some years ago, at the slaughtering establishment of Montfaucon, the carcases of the horses killed during the day, sometimes amounting to thirty-five, were seen in the evening covered with these vermin, and were found next morning picked bare to the bone. The proprietor of one of the slaughter-houses decoyed the rats into an enclosed part of the establishment, where, after one night's slaughter, the dead amounted to 2,650; the result of four hunts was 9,101; and by repeating the experiment at intervals of a few days, he and his men killed within a month 16,050 rats. Their ferocity as well as voracity surpass anything that can be imagined, to prove which the following fact was stated:—Mons. Magendie having gone himself to procure twelve rats, upon which to make experiments, had them put together in a box. On his return home he opened the box, and found but three rats, the others having been devoured by the survivors, and nothing remaining of them but their tails and bones. The fact appears incredible, but the reporters declare they had it from Mons. Magendie's own lips." No doubt this fact is correct, but cannot we Irish match the French fact by our story of the Kilkenny cats, which fought with each other till nothing was left but their heads and tails? The water rat, or more properly, water vole, has a short tail and small round ears. It does not frequent the farmstead, but lives on the borders of rivers and ditches that have water in them constantly, and of canals, mill-dams, and ponds, undermining their banks and fences with its long, crooked burrows, which, like those of the beaver, usually have openings under water, and frequently end with a sort of room, or magazine, in which it stores its provisions for the winter. The store-room is generally placed so as to be above the reach of ordinary floods. The water vole is a vegetable feeder, living chiefly on aquatic vegetables and roots, but is most injurious by undermining fences, letting down land by the sides of rivers and ditches, and thus impeding the drainage; also by making holes in banks, as well as gnawing away sluices, to the ruin of vast areas of property when flood time arrives. Of that well-known, very destructive little animal the mouse there are several varieties, including the common house mouse, or domestic mouse, the long-tailed field mouse, the short-tailed field mouse, or more correctly called the field vole, and the little harvest mouse. This last is the smallest of British quadrupeds, two of them not weighing much more than a halfpenny. This kind makes a beautiful nest, as round as a cricket ball, and about that size. The long-tailed field mouse is in many points like the domestic mouse, and by its much longer tail, sharper nose, and longer ears, may be readily distinguished from the field vole. The field vole, or short-tailed mouse, is small: its total length is about 5 inches, the tail being little more than one inch in length. It is not more than half the size of the water vole, but, like it, having very small ears, barely showing their lips above the fur. The field vole can readily be distinguished by the chesnut-red upper part of the body, the blunt muzzle, the very short tail, which is barely a quarter the length of the body, very scantily covered with hair, and blunt at the tip, presenting a great contrast to the long, graceful, and pointed tail of the domestic mouse. The body below is ashen grey, the feet and tail are brown, without much red in them. The field vole does not rightly belong to the mice, but is allied to the beavers, forming, together with the water vole and the bank vole, or bank campagnol, the only relics of that group of animals. Mice multiply with almost incredible rapidity; their ravages sometimes amounting to ruinous destruction of seed corn. In such a case the remedy given by an old book published a hundred years ago in Dublin is, never sow under the furrow until the intruders have been expelled; the mice then must come to the surface, and meet anything laid on the ground for their destruction, such as white hellebore root, powdered, one pound; staves-acre (a kind of lark-spur), powdered, four ounces; barley-meal, one peck; mix and sift, and add honey half a pound and milk, to work all into a paste; break this in pieces and scatter over the field, or use the phosphoric compound described when treating of the rat; or nux vomica very finely powdered, one ounce; wheaten flour, one pound; treacle, three ounces. In the garden a layer of fine coal ashes, an inch deep on the ground, over peas, beans, bulbs, &c., is a useful preservative; but where mice are very numerous in the field or wood, the pit-fall trap has proved the most effectual. At Angerville, in France, whole farms have been given up to the proprietors, in consequence of the continued devastations of mice; the only known method of checking them was to defer growing any grain until the spring. Jesse gives an interesting account of the great injury committed by mice some years ago in the new plantations made by order of the crown in Dean Forest, Gloucestershire, and in the new forest, Hampshire: "The mice eat through the roots of five years old oaks and chesnuts, generally just below the surface of the ground. Hollies also, which were five or six feet high, were barked round the bottom, and in some instances the mice were seen feeding on the bark of the trees, even at the height of three or four feet from the ground, having climbed up the trees to that distance, and even on the bark of the upper branches the mice barked hollies, oaks, ash, beech, and willows, but very few of the fir tribe. In one plantation of three hundred acres not more than four or five plants were found which were not injured by the mice, or, indeed, destroyed by them. Many of the plants bitten through were as thick as a man's arm; the roots were gnawed so close to the stem that some of the young trees were seen either reclining on one side, or level with the ground. Various plans were devised for the destruction of the mice; traps, poison, cats, &c., with little success. till at last holes or pit-falls were made in the ground about eighteen inches deep, two feet by one and a-half feet at bottom, but at top only eighteen inches by nine, or as narrow as the earth can be taken with a spade out of a hole that depth, the bottom of the hole three or four inches wider every way than the top, and the sides firm. The holes were made about twenty yards asunder, or about twelve on an acre. In these holes, in nine enclosures—total 1,693 acres—part of Dean Forest, at least thirty thousand mice were caught in the course of three or four months; of these, only about one hundred and fifty were the long-tailed kind, nearly the whole number being short-tailed mice. It was, however, calculated that a much greater number of mice than these were taken out of the holes by stoats, weazels, kites, hawks, and owls; by crows, magpies, jays, &c.; by cats and dogs, and a great many were destroyed in traps, by poison, by birds and animals of prey: as many as fifteen have been found in one hole in one night. When not taken out soon, they devoured one another; so that in Dean Forest alone the mice killed were estimated at about one hundred thousand. The total destruction of mice in the two forests would probably amount to more than two hundred thousand. The shrew, commonly called the shrew mouse, is much smaller than the mestic mouse; has a long, slender snout, longer than its jaw-bones, and a squared tail. In many respects it resembles the mole, and is sometimes called the blind mouse. It feeds principally on insects, corn, nuts, roots, and other vegetable matter. The shrew is not venemous, nor capable of biting, for it cannot open its mouth sufficiently wide to seize the double thickness of the skin of horses or cattle. Its mouth will shew that it is of the insect-eaters, like the hedgehog and the mole. It a strong smell, which is peculiar to itself, and so offensive cats, that though they will chase and kill the shrew, they will not eat its flesh like that of the domestic mouse. The does not exist in Ireland. It feeds on worms, slugs, snails, tles, cockchafers, grubs, and other such creatures, and in respect is useful to the farmer. With respect to his bur-ing habits there is difference of opinion. The hedgehog, times called the urchin, hedge-pig, or furze-pig, deserves placed among the friends of man. The many stories told carrying away apples and eggs on its spines are mere tra- handed down from one generation to another, or are the of imperfect observation. The chief food of the hedge- consists of insects, beetles being its special favourites. It also eat earthworms, snails, slugs, frogs, and field mice. very useful in kitchens infested with beetles and cock- s, which it soon devours. It is easily tamed. All British may be reckoned among our friends, as they are strictly vorous, feeding during the night and earliest dawn, g up almost every winged insect that comes across their even the cockchafer, that terrible pest of the garden and Many moths also are eaten by the bats, and as the larvæ th tribe are, as a rule, injurious to vegetation, it may ed that the bat renders us no slight service. Like ehog, the bat is providentially endowed with a capa- hybernation during the winter, while no insects are the wing, as otherwise it would inevitably perish with d hunger. When, however, the warm breath of spring the insects to burst forth from their shelly prisons, and their wings, the bat also awakes from its wintry , and even in daylight may be seen to pass ponds and with rapid wing, snapping up the gnats that are dancing in the sunbeams. The kestrel, or windhover, as it is called, one of the hawk tribe, may be distinguished from latives, such as the sparrow-hawk and the merlin, by the ity of its flight. It does not flash along like the former , nor skim along like the latter, but flies quietly for a little ce and then hovers in the same spot, just as the boy's remains fixed by the opposing influences of the string and wind. The kestrel feeds partly on the larger insects, espe- the fat-bodied moths and the beetles, and partly, I may principally, on field mice. It is to look out for these that bird poises itself in so strange a manner. Gifted, as are the birds of prey, with an eye that can be changed at will a microscope to a telescope, it is equally ready to drop upon some unhappy field mouse that is creeping along flatters itself that it is unseen, or to make a sudden dash at ing insect, seize it with a foot, and transfer the prey to outh without taking time to alight. Sometimes it will on the ground and devour grubs and caterpillars, or even the earth worms and pull them out of their holes. It its eggs on top of some tall tree, taking possession of the rted tenement of the common crow; it never seems to con- a nest for itself, but only squats, as it were, on alien perty. Mr. Waterton tried the experiment of turning a of crows out of their nest in hopes that a kestrel would possession, and found that the vacant premises were occu- in less than a week by a pair of these birds. All the h owls feed chiefly on mice, although they occasionally their diet with a sparrow or other small bird, and at seem to prefer the larger insects, especially the beetles. different species of owl take up different residences. The owl, or tawny owl, prefers to roost in hollow trees, and much attached to this particular residence that unless it find out one suitable it refuses to breed. The white or bar likes to settle itself near man, and mostly fixes on some ing, old ruins, or towers. The goat-sucker is another of agricultural friends. It is a most determined insect-hunter, nocturnal habits enabling it to chase and devour the insects ich fly by night, and remain hidden during the day—cock- fers, moths, &c.; its large mouth enabling it to seize those insects which are most injurious to our crops. The goat- sucker has an extraordinary cry, resembling the humming sound of the spinning wheel. This has given the bird the name of spinner. It is also called the night-jar, and in some places the jar-owl, the fern-owl, and the churn-owl. Its name goat-sucker is derived from the ridiculous notion that it sucks goats and cows; an idea which is equivalent to the pigeon's milk, so largely in demand on the first of April. The number of cockchafers which it eats is almost incredible. The cockchafer is one of the very worst foes to agriculture. Most farmers are aware of the terrible damage which it does during its three years of larval existence as a grub, and how it loses nothing of its appetite in its perfect condition as a beetle, but eats as voraciously as before, stripping trees of their leaves, as it had before robbed plants of their roots, and as the bird catches the beetles just after their rising from the soil in which they had been hidden, it effectually prevents them from depositing their eggs, so that one cockchafer eaten at that time is equivalent to hundreds killed after the eggs have been laid. The whole of the swallow tribe, including the swifts, swallows, and martens, are of the greatest value to agriculture, performing by day the task which the goat-sucker so successfully carries on by night, and devouring insects from the early dawn until the shades of night have closed upon the earth. It is astonishing how large a number of insects of the smaller size can be captured and carried off by a swallow in a single journey. It catches the flies in its mouth, and packs them away in a kind of pouch formed under its chin, where it presses them so closely, that when the pouch is emptied the dead insects roll out in a tolerably solid lump, just like currants from a barrel, or figs from a drum. The common rook has a similar capability of carrying food to its young. In order to enable the swallow to capture the swift-winged insects, its mouth is made with a very wide gape, extending so far into the head, that when the bill is open the bird looks as if the mouth had been slit open with a knife. It has been estimated that the marten consumes upwards of 500 insects in a day. Sir Richard Phillips says it is calculated that the birds of passage that visit the British Isles consume fifteen millions of insects daily. The robin and the wren are real benefactors to the human race. They destroy thousands of living insects, and by picking up the eggs and chrysalides prevent the coming of as many more. When the ground is hard, as if made of flint, when the thick ice rings merrily under the skater's steel, the wren may be seen still hopping about the hedges, pecking here and there at some object too diminutive to bee seen by us. These minute objects on which the bird has been feeding are the eggs of various insects that have been laid on the branches, so that when the young burst their way through the eggshells they may find themselves close to the leaves on which they were intended to feed. These little insect eggs and chrysalides, which are hidden in all kinds of corners, awaiting the coming of spring, the wren is very sharp-sighted in discovering, and by its continual researches saves many a plant and tree from destruction. In these ways the wren and other small birds confer great benefit on our garden and farm crops by preventing the increase of injurious insects. The common song thrush and the blackbird, in common with many other birds, feed largely upon insects, caterpillars, slugs, snails, and worms. Snails in particular are devoured by the hungry and persevering thrush. Having carried off his prey to the accustomed spot or stone, the thrush puts it down for a moment and contemplates it. Should the shell be thin, the bird breaks it up quickly with its beak; but if it should be thick and hard, as is the case with the older and harder snails, the thrush picks up the snail in its beak and bangs it against the stone with such hearty good will that the shell is dashed to pieces and the exposed body of the snail left open to the assaults of the sharp beak. It must be admitted that both thrush and blackbird do injury in the fruit garden. They are very fond of good ripe fruit, cherries, currants, &c.; but let us remember, especially in the case of wall fruit, that the thrush has eaten snails which would have not only eaten the fruit, but covered it with slime, and would have gnawed the leaves and young buds; so that we may allow the bird some little per centage of the fruit it has helped to save. The fruit robbery in the autumn is more than compensated by the snail killing throughout the year. Its depredations are only carried on for a short time, while the fruit is ripe, and may be prevented by using a net in front of the trees. Thus we may benefit by the thrush's insect and snail-killing propensities, have the pleasure of hearing him sing, and keep all our fruit to ourselves. Though the blackbird may not be so useful a friend as is the thrush, yet do not count him a foe. In the rook injurious or beneficial to the agriculturist? Some practical men take one side of the question, and other practical men take the other. Each brings forward arguments that seem unanswerable until you hear the arguments of their opponents. The rook will take up the young plants of potatoes after they have sprouted, for their own sake, being then in a sweet state, and not merely in search of any insects in them; it will pull up the young plants of turnips to get at insects that may happen to be near their roots in the manure, and it is poor consolation to the farmer to be told that the plants were destroyed that insects might be captured. It will light upon laid corn of all kinds, and pick and scratch out much more than it can eat. It alights also on stooks, pulls out the ears, and eats the grain. It will break into the heads of stacks to get at the grain. All these are facts which I myself, says Stephens, "have observed of the rook, and they are sufficient to support the assertion that it is a destructive bird to the farm. At the same time, the rook, in moderate numbers, would do no material injury to the fields; it is only when it is nourished in excessive numbers in large, protected rookeries that it does sensible injury." In light soils, reclaimed bog or upland, rooks injure the potato crop by picking out the sets in the early season, and the tubers in the latter. The injury may be commenced in a field by only a few rooks, but if they be left for a few days undisturbed their numbers become largely increased, and then in the drilled crop, or that in narrow ridges, may be seen many holes bored by the beak, mould scraped down by the feet, and many potatoes torn out and left lying exposed on the surface, in addition to those that had been eaten on the spot or carried away by the birds, and dropped in the adjoining fields, where they are often to be seen. Let us now consider some of the rook's habits that are beneficial to the farmer. Grass land is sometimes frequented by numbers of rooks, which day after day pick it up in all directions, making it look as if it had been treated with a scarifier; but examine and try to discover what their object can be. Take a spade, turn over some of the grass at which they have been pecking; the object of their search will be found in certain grubs, some large, very fat, half coiled, and lying on their sides, and some straight, moderately fat, and about the dimensions of a goose quill. These are two of the deadliest enemies of our gardens and grass lands—the larvæ of the cockchafer and of the crane fly or daddy-long-legs, as it is familiarly called. These two larvæ, pursuing their destructive labours unseen, and never appearing above the surface of the ground until they take their adult form, are far more formidable enemies than even the slug, the snail, and the caterpillar, creatures which can be detected and destroyed by man, but neither human eye nor touch can discover the subterranean larvæ as they silently consume the very life of the plants on which they feed, cutting away the tender rootlets, and causing a "blight," as it is called, to fall upon the herbage. Many an acre of grass, many a fine crop of vegetables, has been blighted from no apparent cause; the plant ceases to grow, the leaves lose their fresh, healthy outline, they become weak and droop, the vivid green fades out of them, and changes to yellow; the edges crumple up, and the plant dies. There is no external sign of injury, and until the plant be uprooted and search made below, no destroyer is visible. But in the earth, or entangled in the roots of the dying plant, will be found an inconspicuous, brownish, smooth-skinned, sharp-jawed grub, whose sleek condition shows the extent of its feeding, and whose cutting teeth have eaten away the sources of life. Hidden, however, as they are from human observation, they are not so from the keen senses of the rook. If a rook be shot while thus employed the stomach will be found to contain a quantity of grass root, together with a mass of substance which an experienced observer would not readily recognise, but which an entomologist sees at once to be composed of the remains of large larvæ, the hard, horny head and jaws remaining as proofs of its true nature. The grass roots are mostly swallowed together with the grub that has entangled itself in their delicate fibres. The object of the rook is not to eat the roots, but to devour the grub that destroys them. The quantity of insects which a rook will carry home to its young is really surprising. In order to perform this task, and to avoid the inconvenience of repeated journeys to and from the fields, the rook has recourse to a plan similar to that which is followed by the swallow tribe when hunting for a like purpose. The gathered insects are not swallowed, but are collected in n mouth, where they form a solid lump under the lower jaw, skin of which is distensible like the cheeks of a man. When the bird has collected its full complement, and is flying home, this lump is discernible at some little distance, and has caused the popular but erroneous belief that a rook is furnished with a pouch at the root of the tongue. It cannot be denied that the rook does much damage to the crops, nor, on the other hand, can its good services to the crops be denied, and, as in other beings, we cannot expect unmixed good any more than such a quality can be expected from ourselves, let us balance the good against the evil, and in our little court of justice follow the British maxims, that the accused is to be treated as innocent till he is proved to be guilty, and that in any doubtful case he is to have the benefit of the doubt. Thus let us judge of and act towards the rook, not trying to exterminate him, but check his depredations, and feel thankful for his benefits. Various scare-crows are employed to protect the crops. Gunpowder is the most effectual means of scaring birds from the fields. An occasional shot does good, aided by the burning of gunpowder matches here and there, now and then, along the windward side of the field. These matches may be made of rags, or soft, thick paper, steeped in a solution of gunpowder and dried. Stephens describes an apparatus which he called a rook battery, and contrived of 24 small brass cannons, four inches in length, to keep up a succession of shots throughout the day. It is said that one pound of sulphur mixed with gypsum and wood ashes scattered on the ground as the corn is coming up, will protect an acre from the rooks. By the heat and action of the ashes the sulphur throws out sulphurous fumes. Another mode often used with success over potatoes is to have sticks in alternate rows firmly driven into the ground, and a stout string passed zigzag-wise from one stick to another, about a foot from the ground, and drawn tight. The common hemp sold in balls for saddlers will answer. No feathers or streamers are required, as the rook is afraid of being entrapped, and will seldom venture within the angles enclosed by the strings. The crow, commonly called the carrion crow, is distinguished by his horny or black bill from the rook. The bill of the rook is bare of feathers as far as the eyes, and appears of a whitish colour. The rook's feathers are of purple splendour, or gloss, but the carrion's crow are of a more dirty black. The crow is a feeder on carrion, mice, lizards, chickens, game, insects, molluscs, &c., robbing the nests of other birds of both eggs and young birds, attacking a stray leveret, and even an early, just dropped lamb. Though bold in attacking other birds, yet the crow is shy of man. Watch for their nests, and shoot them in the breeding season. By tying a cat or ferret to a stake they may be occupied with these till they are shot. The raven is the largest of the crow tribe in this country, and is a scarce bird here. It may be caught by steel traps baited with the entrails or pieces of rabbits, rats, or fowls. The wood pigeon is considered more injurious than the rook; yet it is not without some good services. From its roots in the larger branches of trees it issues at sunrise, to search the open fields for its food—the seeds of wheat, barley, and oats, beans and peas, also the seeds of some very bad weeds, the field mustard, charlock, and ragweed. It eats the leaves of turnip, cabbage, and clover; picks up pulse and grain of all kinds from the sown fields, whenever it can find it exposed on the surface, but does little or no damage by scratching or digging up the seed. They are very injurious to the ripening corn, and will settle down upon it in dozens, whether it be lodged or not: in this they differ entirely from the rooks, which never alights in standing corn. The wood pigeon has strong wings, and uses them like flails in thrashing out the grain, and thus cause much more loss than what they eat; they use their wings also in a similar way on the fruit trees in the garden, to obtain gooseberries, &c., beyond their reach. In winter's severe weather the collect in large flocks and do much injury to turnips. Nearly ten thousand have been observed in a field of twelve acres. They are very shy and wary. In time of snow a hat covered with snow has been found a useful cover for the sportsman and his gun. The starling is an invaluable benefactor, picking up flies, beetles, and other insects that creep among the grass or torment the cattle, and wonderfully keen in discovering and unearthing the subterranean grubs and larvæ. The sparrows, the finches, the linnets, and other small birds are, no doubt, at some periods very destructive to the crops; but there is equally little doubt that they destroy many of the enemies of the cultivated crops. Sparrows and other small birds feed largely on grain and peas as the crops are ripening. They eat in spring a portion of the seed when scattered on the ground, and when turnips, cabbage, and rape and other small seeds appear above the ground they suffer much injury from the little birds, and when these last crops are grown for seed they suffer largely from the linnets and other small birds, not only from the quantity eaten, but also from the larger amount shelled and dropped to the ground. In the garden the bullfinch especially is injurious to the buds of fruit trees, pulling to pieces the buds, which may be seen scattered in profusion on the ground beneath the apple and the gooseberry trees; yet it must be admitted that these small birds feed largely on the noxious insects in their three-fold states of existence; they feed largely also on the seeds of weeds. The injury committed by sparrows and other small birds has led some persons to consider them as enemies that should be exterminated, and the efforts to accomplish that object in some places have been too successful, as the inhabitants, and especially the farmers, of those districts afterwards found to their great loss. In the year 1861 petitions were presented to the French senate asking that laws might be made for the protection of small birds. In some districts of France the birds have been killed to such an extent that some kinds of small birds have become extinct, and others very scarce; their eggs have been taken, the birds have been snared, and destroyed; the consequence was that the insects increased to such a destructive degree that the crops become very poor, the vines, olives, and even the tall, hardy trees all withered. In exterminating the birds, man had exterminated his best friends. It has been said, "The birds can do without man, but man cannot do without the birds." Some years ago many letters were written to the *Times*, the *Field*, and other newspapers on this subject. One writer from the vicinity of Liverpool says: "Here there have been on the part of the farmers and cottagers great complaints made of the mischief done by small birds to corn fields and gardens. In vain did some hold the argument that these small robbers did as much good in destroying grubs and caterpillars as harm to wheat and currants. For the last two years the township has not only paid for dead sparrows, but so much a dozen for birds' eggs. I am afraid to say how many thousand dozen of eggs were taken and paid for, and, as I believe, mainly in consequence of this, we have this year such a plague of caterpillars, and grubs as I never remember. I have had three women constantly employed picking our gooseberry, currant, aud apple trees. Our destruction of caterpillars has been by bushels. I feel so convinced that this plague was partly owing to the last two years' destruction of birds that in my grounds and in all the coverts I ordered the nests not to be molested. I enclose you the head of a sparrow shot this morning in my garden: this was done to test what food it took to its nest. I hope the head may reach you in the same state in which it was picked up, viz., with three green caterpillars and three daddy-longlegs in its beak. If in one journey from its nest it could collect as many, it is easy to guess how much may be done by them to clear trees. My trees from hand-picking are now pretty clear; but I am quite sure it would have been done better and cheaper by birds had they been let alone." The green caterpillars mentioned in this letter were probably the larvæ of the small cabbage butterfly, a most destructive species. Another correspondent says that he found in the crop of a sparrow that he shot as it was coming out of his fruit trees no less than twenty green caterpillars and a number of aphides. Sparrows and other small birds feed largely on the wireworm, the dark gray grubs of the gooseberry-fly, and other caterpillars, also on cockroaches and weevils, and even in their seed-eating propensities do good to the cultivator in feeding on the seeds of groundsel, dandelion, and the sow-thistle, all noxious weeds to our crops. Considering the very great benefit the small birds confer upon us at other seasons of the year, they ought not to be killed, but rather driven away from the sprouting crops for a short time, till the plants have attained sufficient size to lose their softness and be no longer an attraction for the birds; and from the ripening crops the birds should be scared away, but not with sparrow club exterminating practice. Perhaps the most effectual way of driving away the small birds is to fire a few charges of shot among them occasionally: powder alone will not be sufficient. As a protection for garden, vegetable, and flower seeds, a solution of naphtha or assafœtida is useful. A tablespoonful of rectified naphtha, mixed with two gallons of water; water the ground after the seeds have been sown, and again when the plants first appear above ground, or steep a ball of woollen thread in naphtha, and strain it over the beds or rows of seed. Perhaps a very weak solution of gas-water may be useful for protecting rows of peas. Mr. Wood used at each end of the garden a wooden arch fixed in the ground, with strong white thread passed back and forward, so as to form a continuous passage or tunnel; the birds are afraid of the thread, which also serve to support the peas in their early growth. A cat or hawk kept in the garden, or even the figure of a cat made of sheet iron, the figure to be in a sitting posture, or a little windmill on the top of a pole, driving a rattle, will for a time scare birds; but inanimate scare-birds are only temporary in their effects. Steeping the seeds, turnip, cabbage, &c., and drying them with sulphur, and other such modes are found useful. I owe my acknowledgments to the author of "Our Garden Friends and Foes," "The Book of the Farm," "The Pests of the Farm," one of Richardson's rural hand-books, "Agriculture, Ancient and Modern," "Jesse's Gleanings in Natural History." Those who wish to study the subject we have so slightly referred to this day will find in each of these books very much that is interesting and instructive.

AN OHIO CHEESE FACTORY.

An Ohio dairyman makes the following report of his operations in one of our exchanges:—

"I commenced the erection of my factory buildings on the 18th day of March, 1865, and they consisted, when completed, of a continuous building 191 feet in length, and 30 feet in width; 100 feet of it three storeys high, and 60 feet one and a-half storey high, and the balance, 31 feet, but one storey high. There is capacity and pipes laid for putting in six vats, of five hundred milk gallons each, although there were but four put in last season. The first milk was received at the factory May 2nd, and the last December 9th. Commenced with making two cheeses the first day, and closed up with making thirteen the last. The greatest number made per day, 27; and the total number made, 3,449. Seventeen hundred averaged 85 pounds each, and the balance about 48 pounds each.

"The number of pounds of milk received was 2,125,145, equal to 206,324 gallons, from which I made and sold 228,514 pounds of cheese, for the sum of 17,701 dollars 89 cents, averaging 16¼ cents per pound for the cheese, 1¾ cents per pound for the milk, 18¼ cents per gallon for the milk, and a yield of one pound of cheese to 9¼ pounds of milk. One-half of the milk was skimmed after the 4th Oct., and all skimmed after the 22nd Oct. The average number of cow from which we worked the milk was 530, averaging 431 pounds of cheese per cow, and 71 dols. 13 c. gross, and 62 dols. 51 c. nett to the dairyman, clear of all expense. That amount is simply for the cheese made and sold after the 2nd of May.

"The total expense to the dairymen getting the milk drawn, made up, everything furnished by the manufacturer, and the cheese marketed, was two cents per pound, leaving net 14¼ c. For one dairy of 13 cows I made 505 pounds cheese per cow, 83 dols. 32 c. per head; another of 21 cows, 461 pounds cheese per cow, and a number of others near that amount. Some may think that yield not large, but I wish them to recollect that one month at least of the cheese-making season was gone before I commenced making at my factory. The factory will start again this season the 1st of April, running on the same principle as last season, making a uniform and No. 1 article of cheese, and for which we shall expect to get a No. 1 price, and give satisfaction to the buyer and dairymen. My factory has capacity sufficient to work the milk from 1,200 to 1,500 cows, which I expect to have the present season."

THE MEAT MANUFACTURE.

The productiveness of the meat manufacture depends, as was illustrated by me at some length in a paper published in the 11th volume of the English *Agricultural Society's Journal*—(1) on increasing the fertility of the land; (2) on giving expression to that fertility by the selection of the best plants for cultivation; and (3) on selecting the best animals for the consumption of those plants.

(1.) *Grass Land* v. *Arable as Producers of Meat.*—Land yielding 12 or 15 tons of green food per acre yearly, without any labour but that of repairing the fences which divide it, destroying the docks and the thistles which invade it, and supplying manure to maintain it, is producing more at less expense than perhaps it could do in any other condition. It is not in such cases as this, then, that our comparison must be made: there is much *poor* pasturage in the country, which lies, nevertheless, under a climate proper for arable farming; and it is about this that the question obtains.

There is no doubt that over much of this, which, though drained, would not yield 30 tons of green food per acre in four years, an equal quantity might, if it were properly cultivated, be obtained in turnips and clover, with probably 2 tons of straw and 60 or 70 bushels of grain, in the same time. Grass is probably more nourishing per ton than turnips; but when the one is consumed in all weathers by unsheltered animals, and the other in well-bedded houses, it may be doubted whether the resultant produce of meat may not be about the same in either case—with a clear balance, of course, of so much grain as food for man in favour of arable culture. But this matter requires a detailed estimate, and this I shall endeavour to give, merely premising that the above figures are not given without reason; as on the farm I write from, three-quarters of which were formerly grass, a stock of about 40 head of oxen fattening to 60 or 70 stones, and between 200 and 300 sheep fattening to 24lb. a quarter, with 50 or 60 pigs, are now kept during winter, and about half those numbers during summer, where formerly a herd of 25 cows, and about 20 yearling and two-year-old heifers, with a few pigs, were maintained in store condition; while, in addition to the above, the land now permits an annual sale off it of about 4,000 bushels of wheat.

Grass land worth 30s. per acre of annual rent may be supposed to yield 8 tons of grass per acre per annum; and this may be believed able, by careful consumption, to produce 9 imperial stones of beef; or, at 6d. per lb., a money value per acre of £18 18s. in six years.

The same land broken up would under good management yield during—

The 1st year, 25 cwt. of wheat-straw;
2d „ 24 tons of mangel-wurzel;
3d „ 25 cwt. of wheat-straw;
4th „ 18 tons of Swedish turnips;
5th „ 20 cwt. of barley-straw;
6th „ 10 tons of clover;

or 52 tons of green food, and 3½ tons of litter, in six years, besides the produce of grain.

Of course, it is easy so to state figures as to arrive at any result that may be desired; but in the above I have gone upon what I believe to be reasonable data, viz.:

That 24 or 25 cwt. of hay is a probable produce from land of such value;

That hay is one-fifth or more of the grass from which it is made;

That the growth of aftermath is to the growth up to hay harvest as 1 to 3 on such land.

We know from experience that turnips consumed without any artificial food, as it is called, given with them, will not yield more than 1lb. of beef or mutton for every 150lb. of green food; and giving grass credit for a little more nourishment than this, we have assumed that 140lb. of it will yield the same meat. On the side of arable land, again, I have stated amounts of produce which from several years' experience I know to be probable.

The 52 tons of green food (supposing the straw to be all used as litter) will on the above datum yield 776lbs. of beef, and this at 6d. per lb. is worth £19 8s., an amount rather larger than that which was the whole return from the grass, while here we have in addition the produce of three crops of grain. Whether the whole extra expense of this mode of managing the land will be more than paid by this extra produce is hardly within the province of this inquiry.

It is hardly worth while considering the case of arable land wholly devoted to meat-producing crops, and we therefore go on to compare in this respect the various rotations of crops commonly adopted.

If a cultivation wholly of green crops, or of crops for consumption by cattle on arable land, would pay, it would be a source of immense wealth in many parts of Ireland, where waste-land reclamation proceeds so slowly, mainly because of the unprofitableness of corn cultivation under their watery skies. The results of the above estimate, however, must be the standard with which to compare the productiveness of grass, and it has been seen that the former, besides the large crops of grain on the arable land, yields more meat than the latter. The conclusion which therefore seems to be unavoidable is, that in cases when equal skill and care have been brought to bear both on arable and pasture farming, the latter might be converted without diminishing, and probably with an increase to the national supply of animal food.

(2) *Various Rotations as Producers of Meat.*

(*a*) The first, the Norfolk, or four-course rotation, may be supposed able to yield in the

1st year, 25 cwt. of wheat straw per acre;
2nd „ 19 tons of Swedish turnips;
3rd „ 20 cwt. of barley straw;
4th „ 11 tons of clover and grass.

This is equal to 30 tons of green food in four years, or 7½ tons per acre per annum, a quantity which, at the rate of one for every 150lbs., is able to produce about 1 cwt. of beef per annum.

(*b*) In the second, when this rotation is extended one year by keeping the grass down two years, we may suppose a somewhat larger acreable produce of green crop. Thus—

1st year, 25 cwt. of wheat-straw;
2nd „ 20 tons of swedes;
3rd „ 20 cwt. of barley-straw;
4th „ 11 tons of clover;
5th „ 9 tons of clover;

giving 38 tons as the produce of five years, or nearly the same acreable produce per annum as in the former case.

(*c*.) We now may take the Dunbar six years' course of crops as our third quotation, and here we may expect—

1st year, 20 tons of swedes;
2nd „ 20 cwt. of barley-straw;
3rd „ 12 tons of clover;
4th „ 25 cwt. of wheat-straw;
5th „ 25 cwt. of bean-straw;
6th „ 25 cwt. of wheat straw;

which will yield 32 tons of green food, or 478lb. of meat per acre in six years—a quantity equal to about 80lb. per acre per annum.

(*d*.) In our fourth instance we take the eight years' course followed on the farm from which we write. It may produce—

1st year, 25 cwt. of wheat-straw;
2nd „ 25 cwt. of bean-straw;
3rd „ 25 cwt. of wheat-straw;
4th „ 24 tons of mangel-wurzel;
5th „ 25 cwt. of wheat-straw;
6th „ 12 tons of clover;
7th „ 25 cwt. of wheat-straw;
8th „ 20 tons of swedes;

or, in eight years, 56 tons of green food, corresponding, according to our original datum, to 104lb. of meat per acre per annum, (*e*.) As regards heavy land rotations of crops, we take the following from an essay on that subject in the fourth volume of the *Agricultural Journal*. It will produce probably

1st year, 12 tons of vetches and 16 tons of rape and turnips;
2nd ,, 25 cwt. of wheat-straw;
3rd ,, 12 tons of clover and tares;
4th ,, 25 cwt. of wheat-straw;
5th ,, 25 cwt. of bean-straw;

or, 40 tons of green food—*i. e.*, about 600lb. of meat per acre in five years, equal to nearly 120lb. per acre annually.

(*f*) Our last instance shall be selected from Professor Low's work, where it is praised for its suitability in rich clays. It may yield—

1st year, nothing—summer fallow;
2nd ,, 25 cwt. of wheat straw;
3rd ,, 12 tons of clover;
4th ,, 25 cwt. of oat straw;
5th ,, 25 cwt. of bean straw;
6th ,, 20 cwt. of barley straw.

It thus produces 12 tons of green food in six years, or 30lbs. of meat per acre per annum.

It is proper to remark that the above estimates are more likely to be relatively than positively true; the datum on which their produce of meat is calculated is of course subject to the vicissitudes which affect all agriculture, and stultify all farm estimates; the herd which is to convert this food may be carried off by disease, and its produce of meat will then of course be anything rather than 1-150th weight of the food. But all the rotations named are liable to this risk alike, and it may therefore be useful to compare them:—

Name.		Period.	Pounds of Meat produced per acre per annum.
a Norfolk	...	4 years	110
b Ditto	...	5 ,,	110
c Dunbar	...	6 ,,	80
d ——	...	8 ,,	104
e Stace	...	5 ,,	120
f Low	...	6 ,,	30

Of these, the fifth is less likely to realise its estimate than of the others, as its large produce depends upon the possibility, on an average number of years, of obtaining 16 tons of rape or turnips on a clay soil after a spring crop of vetches, and this is extremely doubtful. Of the fourth rotation—our own—we would only say, that we have grown in a past year 30 acres of clover (15 of them for horses), 30 acres of mangel wurzel, 15 acres of swedes and turnips, 14 acres of carrots and potatoes (of which at least 12 acres have been sold, or eaten by horses), so that on 3-8ths of the farm we have had a produce for consumption of 960 tons of green food; and if all had been converted into meat, as it might have been, the produce available for that purpose would have been—

30 acres of clover	...	...	360 tons.
30 ,, mangel wurzle		...	420 ,,
15 ,, swedes	...	...	300 ,,
14 ,, carrots, &c.		...	280 ,,
Total	...	...	1360

The meat made from 960 tons was as follows:—

	Lbs.
70 sheep, bought at probably 15lbs. a quarter, were sold at 25lbs. = 70 × 40	2,800
About 160 sheep, bought at 13lbs. a quarter, were sold at probably 23lbs. = 160 × 40	6,400
10 oxen, weighing 5 cwts., became 6 cwts. each	1,120
20 oxen, weighing 6 cwts., became 8 cwts. each	4,480
6 cows, weighing 5 cwts., became 7 cwts. each ...	1,344
Add (say) 30 cwts. of bacon and pork	3,360
Total meat made	19,504

But at least £240 worth of food has been purchased; and if it be supposed to have made its worth of meat (which is, by the way, a very doubtful thing), then, at 6d. per lb., we must deduct at least 9,504lbs. from the amount of meat made, leaving 10,000 lbs. as the produce of 960 tons, or about 13,000lbs. as the produce of 1,360 tons—the produce, in fact, of a farm of 240 acres. This is only about 60lbs. of meat per acre: it is only 1lb. of meat produced by the consumption of about 200lbs. of green food. It is a result, however, probably as near the truth as we can attain, including the circumstances of illness suffered by stock, and of a deduction of the whole value of cattle-food purchased.

In the sixth rotation named, the small produce of meat illustrates the effect of the naked fallow. I believe that there is no more effectual method of increasing our supplies of animal food than the substitution of a green crop, such as the vetch, the cabbage, or the mangel-wurzel (all clay-soil plants) for the naked fallow. The substitution could be effected without expense—that is, at a cost paid for by the additional returns it would produce. A crop of 24 tons per acre once in four or six years would be a clear gain of animal food to the amount of 60lbs. or 90lbs. respectively per acre annually over those districts which admit of the change.

We have thus to recount, as the conclusions to which the second section of our subject has led, that the substitution of green cropping for naked fallows would be cheaply productive of meat; that the rotations in use on arable land vary as much as from ¼ of a cwt. to more than 1 cwt. per acre in their produce of meat, and that much therefore may be added to the national supplies by the selection of a good succession of crops; that the conversion of inferior grass land to arable culture, while it would add largely to the supply of human food in the shape of grain, would also to a small extent probably increase the supply of meat.—*Morton's Edition of Arthur Young's Farmers' Calendar.*

TIME TO CUT TIMOTHY HAY.

C. S. Paine, of Vermont, writes to the New York Farmer's Club: "The question should not be, at what stage will it produce the most weight, bulk, or nutriment, if that nutriment is turned to a hard crusty shell of wood, and cannot be made available to the animal that consumes it. Such hay may be best for a city consumer, where he cuts and, perhaps, steams it to make it tender, but I think not for the farmer. I have noticed that animals are more fond of hay cut at least before all the heads are in blossom. I nave noticed that if after feeding such hay you change to timothy cut after the seed is ripe, they will look at the feeder, as much as to say 'I want something better.' And then again, you will find the mice will burrow in such hay, and you will find it full of chaff and chankings. A man of my acquaintance cuts his timothy mostly before in blossom, and always finishes before it is out of blossom, and it is astonishing to see how much stock the bulk of his hay will keep; the hay looks almost like green grass; his sheep and cattle fat on it, and so far from the sod deteriorating, it is improving every year, and he winters more stock on the same number of acres than any farmer I am acquainted with. His crop of rowen is almost as good as the first crop."

Alfred Young writes:—"My father cut timothy when in full bloom, and I know that he fatted cattle on that kind of hay, without grain or other feed. Also one of the best dairymen in this township says that cows will give much more milk fed on early-mown hay than late. I have always believed that ripe timothy was not much better than straw. It is what I call grass straw, being woody and fibrous, with but little nutriment."—*Prairie Farmer*.

TAKING THE YOUNG PIGS FROM A SOW WHEN SHE LITTERS.

A letter from "Harden, Yorkshire," appeared lately, which somehow escaped our attention, or we should have replied to it; however, as it is of some little importance, and as it takes us to task for our teachings, we re-insert it:—

SIR,—Under the head of "Queries and Answers," in your paper of last Saturday, you instruct some "Greenhorn" from Ennis how to manage his fat sow in her first parturition as follows:—

"Attempt no quacking (!), but have her closely watched, and as she litters let each be taken from her and put into a basket with some fine hay or warm wool, till all are come forth. Then put each by hand to suck, and when they get enough return them to the basket. Attend to this for three or four days before they are permanently left with the sow, &c."

Now, sir, I venture to say that no sow will stand *her young ones being taken away in a basket*, and brought back in this manner for *three or four days*, if 'tis lined with silk, instead of warm wool or fine hay. Your friend will never rear a pig. Let him try this plan: Have the sow lean, not fat. Let the *regular attendant only* be present on the occasion. As each one comes forth let him place it to the teat, and get the litter to suck as quietly and as soon as possible. He must try to keep them from being lain on or trod upon by the sow, but rather allow *some* to be sacrificed in that way than *irritate the mother*.

After they have all found the way to the teats and had a slight breakfast, let him retire and leave them to the care of their natural and generally most affectionate guardian. This is the experience of—Yours, HARDEN, *Yorkshire*.

To this the original querist from Ennis replies as follows:—

"SIR,—I see by your last number that your answer to my query—what should I do with a valuable sow on her first litter, within a week of her time, from which I apprehend trouble in her parturition owing to her being very fat?—has induced 'Harden, Yorkshire,' to give us the benefit of his experience, and recommends me to try his 'plan.' Before recurring to his plan I must say I followed your instructions, and succeeded quite to my satisfaction. That 'interesting event' is now over, and, I am happy to say, the 'fat sow' and her young are now all right.

"I have found no difficulty in removing the young into 'the basket,' and leaving them near, not '*taking them away in a basket* for three or four days,' as 'Harden' phrases it. After two days I found I could with safety leave the young ones with her.

"Now, sir, as to 'Harden's plan,' viz., 'Have the sow lean, not fat. Let the *regular attendant only* be present on the occasion. As each one comes forth let him place it on the teat.' I differ a bit from him. 1st. I don't like to breed from a sow that will not keep fattish even on grass, with very little other feeding. 2nd. I consider the better the condition, the better she will breed and rear her young. 3rd. A 'lean sow' will hardly, if ever, bring two litters a year regularly, as a well fed, fattish sow will usually and ought to do. 4th. I don't think it is possible to 'let each be placed to the teat as he comes forth.' 5th. The young ought not to be placed to the teat until the placenta has been ejected.

"I would like to know on what authority 'Harden' says 'your friend will never rear a pig.' I may tell him I hope to do so, and have reared some good ones, which he would admit if he saw my present stock. More, I would like to know is it because I seek information in your columns he calls me 'Greenhorn from Ennis.' I beg to tell him it is a long time since I was a 'greenhorn.' I also tell him I agree with him in leaving sows to farrow with the '*regular attendant only*,' as the less they are irritated the sooner they let down the milk; also that I am obliged for his plan, which is not a bad one, save those little objections I have raised.—Yours, &c., SUBSCRIBER, *Ennis, 28th May*, 1866."

Our subscriber's letter is certainly a sufficient answer to "Harden, Yorkshire;" but as he calls in question the authority and practical value of the information and recommendations given, and by so doing would lessen the confidence which the *Gazette* has for so many years enjoyed, as far as "Harden, Yorkshire" can do by stating "your friend will never rear a pig," we have but to say that the mode of treatment recommended by us has been adopted by numerous pig breeders and fanciers in Ireland.

It will be in the recollection of many of our readers who have frequented the Royal Dublin Society's Spring exhibitions of live stock that sows have been shown which have littered on the way to or in the show-yard, and that the owners and attendants treated the mamma pig and her offspring exactly as we have recommended, and that the visitors were daily witnesses of the interesting sight of seeing the basket brought near the crib in which lay the unwieldy mother, a great overgrown fat white Yorkshire sow, and the tiny young things, handed one by one, put in through the bars of the crib, still held by hand, and allowed to suck till satisfied, and then removed.

In addition to this public instance, we have a beautiful Berkshire sow since it was eight weeks old. The 27th February last she had her first litter, no less than 14 black beauties. She littered in the middle of the night, and the young things as they came forth were one by one basketed, and were brought regularly from the warm kitchen to the sow and regaled in the manner recommended, and restored to the basket and warm kitchen till the "lady in the straw" was perfectly recovered and able to perform her maternal duties, which she did with care. Had we not adopted this plan it is quite possible we would never have reared one of them; for, after having given birth to thirteen, we thought all was over, and in some hours after she gave birth to the fourteenth, which she devoured. Well, we reared the rest, and have now six of as well-looking swinish lads and lasses as can be seen. So much for "Harden's" assertion, that those who follow our teachings will never rear a pig.

We had begun to think, after reading "Harden, Yorkshire," that Yorkshire and Irish pigs were differently constituted as to temper and disposition; but curiosity tempted us to look into "Youatt," the best and most reliable author in the English language on our domestic animals; and he says, page 116, in his valuable treatise on the pig, "The young ones should be taken away as fast as they are born, and deposited in a warm spot; for the sow, being a clumsy animal, is not unlikely in her struggles to overlie them, nor should they be returned to her till all is over, and the afterbirth has been removed, which should be done the moment it passes from her; for young sows especially will invariably devour the afterbirth if permitted, and then, the young being wet with a similar fluid, and smelling the same, will eat them one after the other." So that we are led to believe the practice is in vogue in England, and that we certainly are not singular in adopting it.

In our own case, as the sow got accustomed to the removal of her young ones, we had some doubts about her not being careful enough in lying down to suckle them, and that there was some danger of her crushing some of them under her as she did so, and, therefore, kept them in the basket for three or four days, till they got strong enough to take care of themselves. It is fortunate for "Harden, Yorkshire," and also for some more of our readers, English as well as Irish, that he called in question the propriety of our teachings, as he will now have learned a little more of such matters than he evidently did before.

We should not forget to thank our Ennis subscriber for coming so promptly to the rescue; and though "Harden, Yorkshire," has in his wisdom designated our respected subscriber a "greenhorn" from Ennis, he has in his letter in reply shown "Harden, Yorkshire," that he is not so green as the letter has gratuitously supposed, but a sound, practical, experienced man, from whom "Harden, Yorkshire," and many others, could gain valuable information, if they would only cast aside prejudice and seek knowledge. But, unfortunately, Englishmen, and Scotchmen too, that do not know us (it is the contrary with those who do) imagine that in Ireland we are a parcel of know-nothings.—*Irish Farmers' Gazette*.

HIGH FARMING AND GOOD EMPLOYMENT.

We take the following interesting articles from the *Sligo Independent*. On the 30th June the editor wrote as follows: "Among the farmers of the empire, with the combined system of tillage and grass, the gentlemen of the Lothians stand A 1, and of these we will select Mr. George Hope, of Fenton Barns, with 670 acres, and Mr. Peter Handyside, of Fenton Deem, with a similar holding, as fair examples. Mr. Handyside about forty-five years ago improved 100 acres of light moorland producing blue grass unfit to feed sheep or cattle, by ploughing it up and covering it with better soil, subsoiling eighteen inches, a crop of oats, and carting the clay over the light lands; becoming in a few years equal to the best land of the farm, producing as much as £40 per acre in potatoes. The system of Mr. Handyside's farming—2-5ths generally in grass, half being two years and half one year old; 1-5th turnips and potatoes, for winter-keep of sheep and cattle; and 2-5th grain crops. On this farm a large quantity of oilcake is used on the pasture and in the yard, the sheep getting 1lb. daily, and cattle 5 to 7 lbs., by which means two flocks are turned out instead of one. A man and pair of horses are kept to every forty-five Scotch acres. They employ a steward, four labourers besides ploughmen, twelve women in winter for four months, and twenty-six in summer cleaning the green crops. The women get 1s. per day. Our rents could not be paid if our land was in grass, nor would any employment be then given, except to a couple of herds; a man and a boy are required in addition, to look after the cattle in summer. The women are Irish or Highland, and do their work well. As to our manures, &c., the same is carried forward as on Mr. Hope's farm, described in the *North British Agriculturist* of 20th June, which we recommend to every proprietor and farmer to read. From it we extract that the farm of Fenton Barns, Haddingtonshire, consists of 670 acres, under a lease of twenty-one years, the family being on the farm for eighty years. One-third consists of fertile loam, one-third of heavy clay of medium fertility, and one-third of yellow moorish sand on alluvial clay. All the farm has been drained and the ditches tilled, thus adding to the acreage working-land. In 1864 a stationary steam-engine of ten-horse power was bought at a cost of £650, with 2,000 yards of wire-rope, which has done well, grubbing or cultivating seven acres per day and harrowing ten acres across. The grubber enters the soil to the depth of eight, twelve, and fourteen inches as required. In the autumn of 1865, 103 acres of wheat were sown in place of potatoes and beans, 27 acres of the bean land having been gone over twice, and 94 acres of stubbles grubbed. Since steam-power was applied the turnip crop has been got in early, and has been superior. The crops of the present year are—potatoes 82 acres, beans and vetches 33 (grown in rows sixteen inches apart), turnips 88 acres, wheat 126 acres, barley 88 acres, oats 54 acres, mixed rye-grass and clovers for cutting 21 acres; pasture, 85 acres of young grass depastured. Extent of second year's pasture 50 acres, in permanent pasture 3 acres, turnipseed 15 acres of purple top. Mr. Hope holds another farm (Dirleton) of 220 arable acres, and 500 of links and pasture, bent chiefly growing on the links or sands. The sands are clayed at the rate of 200 carts per acre, and in this way 100 acres have been made fertile. On Dirleton farm the present crops are 31 acres potatoes, 50 of turnips, 38 of barley, 9 of wheat, 34 of oats, 6 of rye, the remainder in pasture, the land being grazed for three years—the land being ploughed out of grass for the potato crop. The market produce of corn, beef, mutton, and wool has been doubled from the system of tillage compared with grass. Number of farm servants on Fenton Barns nineteen by the year; at Dirleton, one shepherd, three ploughmen, and two corn-men. On both are numbers of daily labourers, and thirty to forty women and boys, the annual amount paid for wages on the two farms being £1,850, or at the rate of £3 for each acre cultivated. Besides the steam-engine thirteen pair of horses are kept. Cattle kept on Fenton Barns—1 shorthorn bull, 5 cows for rearing calves, 12 cows belonging to the farm servants, 80 cattle fattened. Sheep (Leicester)—Number of ewes 110, and cheviots 180 to 200. 100 tons corn and cake, and 200 quarters grain are consumed by the stock. Manures used this season—Fifty-six tons Peruvian guano (£750), seven tons nitrate of soda (£120) seventy tons superphosphate (£480), or over £1,300; besides manure from Edinburgh, costing 2s. 3d. to 2s. 6d. per ton, and 1d. per ton per mile rail. Fifty or sixty tons lime are annually brought to the farm and mixed with weeds, road-scrapings, &c. The annual outlay for feeding substances and manures exceeds £4 per acre; and for the last thirty years £2 per acre has been spent on every acre under cultivation. While we do not wish small farms turned into large, because small farmers are the bone and sinew of this country, we want our graziers who give no employment to follow the examples of Messrs. Handyside, Hope, and such gentlemen, who pay annually in wages from £1,700 to £1,800, instead of as here, a couple of herds, with lower wages than the girls in Scotland cleaning the turnips. We are much indebted to Mr. Handyside for the information he has sent us from the article we wrote on, an "Alderman of the National Association," calling English and Scotchmen coming to reside among us and give employment "bloated farmers." These are the men to stop our population from emigrating, but the National Association deters them from coming here to spend their capital and make money.

This statement drew forth the following letter from "an unbeliever," who signs himself "X. Y. Z.":—

"To the Editor of the *Sligo Independent*.—Sir,—I read your article on 'High Farming and Good Employment,' in last week's *Independent*, and can't know how £2 per acre in labour and £2 per acre in Peruvian guano and superphosphates, or £4 per acre, can pay in addition to the rent. Probably in East Lothian the rents may be only one pound per acre, while good lands in this country are let at 30s. to 40s. If Messrs. Handyside and Hope gave a balance sheet, stating on one side what the rent and all other charges and taxes are, and on the other the receipts, putting them under separate heads, the farmers here might then be able to judge. There is an old saying, 'You may tell it to the marines, but the sailors won't believe it,' which seems applicable to this case.—Ballymote, 5th July, 1866."

To this letter the Editor replies in the following article with the appropriate heading

HIGH FARMING AND GOOD EMPLOYMENT ONE OF THE CURES FOR IRELAND.

When we find East Lothian farmers expending annually in labour and manure over five pounds per Irish acre, besides paying rent forty per cent. higher than in Meath, Roscommon, Tipperary, and our grazing districts, we must come to the conclusion that tillage, with capital and skill, is best for the farmer and best for the country—double the quantity of stock is fed by indoor feeding and green crops, while grain is grown by hundreds of acres unknown here in the grass-lands. We do not advocate the consolidation of farms, as in Ulster there are industrious and well-doing tenants on holdings from ten to thirty acres. We wish to keep our people at home, and our small farmers to live; but we wish to see all our grazing farms converted into tillage, and thus give employment to the people who are willing to give a fair day's work for a fair day's wages. "Y. Y. Z.," doubting the figures in our article on "High Farming and Good Wages," has drawn from one of the largest farmers in East Lothian the following reply:

"To the editor of the *Sligo Independent*.—Sir,—Your correspondent signed 'X. Y. Z., Ballymote, 5th July,' says 'he does not believe how £2 per acre in labour and £2 per acre in Peruvian guano and super-phosphate, in addition to rent, can be paid, unless the rents in East Lothian be only one pound per acre, while good lands in Ireland are let at 30s. to 40s. per acre.' I may tell 'X. Y. Z.' that very inferior lands in East Lothian are let at 30s. to 40s. per acre, and our best at £4 to £5. I can also tell him that the high farming-men who pay these rents are willing on expiring of leases to renew, the proprietors seldom or never changing such tenants; while those farming otherwise seldom run out their leases. I would be happy to show 'X. Y. Z.' or any practical farmer my holding, and introduce him to some of the high farming-men here, but certainly would not ask them to lay open their ledgers. But if seeing is to believe, I could convince him that high farming only does pay; and if he thinks of visiting me, he can drop me a note with real name, addressed "E. L., Post-office, Haddington, Scotland," and it shall have my attention.—Haddington, 15th July, 1866."

We would be glad to see our great proprietors, either in their demesnes or attached to their demesnes, establishing farms of fifty, one hundred, or two hundred acres, with a proper set of books kept and left open for the inspection of their tenants, showing a rent of twenty-five to forty shillings debited to the farm, with the cost of guano and other manures. Put our cess, tithe, poor-rates on the one side; and on the other, the receipts put under various heads of crops sold and profit on cattle; and this might induce the tenants to follow the example if they saw it paying. One cause of the high rents in Haddingtonshire exceeding those in Meath and Kildare is the proximity to Edinburgh and Haddington markets, generally the highest in the kingdom. The Government, next session, should introduce a bill allowing landlords bound up by entails and family settlements to grant adequate leases—all to be voluntary, none compulsory, both parties making their own bargains on the principles of free-trade without any intervention of the law. We see that Mr. Handyside improved, on a nineteen years' lease, one hundred acres of moorland, and, when getting a renewal, paying an advanced rent even for his own improvements without complaining, because during the nineteen years he profited by his outlay. This is a fact we give to those demanding, in Lord Palmerston's language, "landlord wrong," that is, fixity of tenure. Let our farmers with capital act as the Scotch farmers do on twenty-one years' leases, and employ the people when enriching themselves; and this is a better cure to stop emigration than preventing farmers of capital and skill investing in Ireland and tilling the country, by calling them "some bloated farmers from England and Scotland," and others holding them up to ridicule; but the people would look on such gentlemen coming to set an example of industry, and give a fair day's pay for a fair day's work, as their friends and benefactors.

ICE-HOUSES, ICE-SAFES, VAPOUR-SAFES, AND REFRIGERATORS.

It is far from our purpose to frighten old-school farmers out of their wit on the present occasion. Suffice it to say that people are becoming so hot in the race of progress, that it is hardly possible for even the majority of youngsters to keep up with them. And that is not all; for the climate of the country itself is so improving, and the temperature becoming so much higher, that one is almost forced to admit the peculiar notions of those who lay it down in their natural philosophy that "the internal fires in the centre of the earth are approaching nearer and nearer the surface," or else that "the great globe in which we live was, when the curse went out against it, hitched out of its original orbit, and has been consequently wheeling nearer and nearer the sun ever since," according to the teaching of others, in order to account for differences like those in question. We shall, however, after a little quiet reflection, account for such differences otherwise; for, in consequence of an improved drainage of the land, the country is fast losing its natural ice-houses, ice-safes, vapour-safes, and refrigerators, and hence must have recourse to artificial ones. There can be no mistake about this, for the thermometer proves it in the most convincing and satisfactory manner. From time immemorial, the castle and manor-house have had their ice-houses, but more—so some critics say—for the sake of fashion than utility and profit. But as regards the rising and urgent demands of the farmer, the conclusion of our critics must be reversed; for the whole of the animal produce of the land, including the produce of the dairy, poultry-yard, and feeding-stall, requires to be cooled down to a proper temperature in a dried and purified atmosphere, in order to fit it for market.

The question which we thus propose discussing is a chemico-mechanical one. When ice absorbs so much caloric, or heat, it becomes water, or melts; and when the heat thus absorbed is removed, the water again solidifies and becomes ice. For a similar reason, butter and all animal fats and fluids become liquid or solid according to the quantity of caloric they absorb or give out. The alternation of the seasons, as of summer and winter, furnish annually familiar examples of this kind. The melting of the snow on high hills in the summer-time, and the covering of them again on the return of winter, is an example on a large scale. These are natural examples. Art also furnishes examples on a scale, if not equally magnificent, at least worthy of notice. Thus the thorough drainage of some wet districts has, by the rapid removal of the melting snows and rain-water from the land, and by the great decrease of evaporation, and by the direct absorption of heat which has thus taken place, greatly increased the general temperature of such climates, advancing both seed-time and harvest upwards of a month. The clothes which we ourselves wear, and the household accommodation and shelter which we provide for our cattle in winter, and the shade which we and they seek from the sun's rays in summer, are also examples of a kindred character. Such examples may be said to be for general purposes; but they are suggestive of others, to meet the wants of public life in all its varied and multifarious details, so to speak; and these latter are those involved in our proposition, viz., ice-houses, ice-safes, evaporation-safes, and refrigerators for farmers, so as to enable them to send their milk, cream, butter, poultry, beef, mutton, and pork to market at a proper temperature, so as to realise its highest commercial value.

The farmer, whose butter is so liquefied at this season that it cannot be handled, and whose poultry, beef, mutton, and pork are so soft that in coming up to London the meat, by the shaking-to-and-fro action of the bones, undergoes a sausage-making process by no means favourable to its market value, must bear in mind that an excess of caloric is the cause of all this loss. Such is the philosophy or the science and practice of the day. At this season of the year, when the inhabitants of the capital are being almost roasted alive, an excess of caloric is the most worthless thing in the world that farmers can send them. And, besides, if it is not foolish, it is at least very silly and shortsighted, as it is many degrees worse than "sending coals to Newcastle," inasmuch as milk, cream, butter, poultry, beef, mutton, and pork would fetch more money without the caloric than with it. In the winter time, when the face of the earth is icebound some inches deep, combined caloric may be worth its weight in gold and something more; but in the summer time, it is now-a-days in the opposite side of the ledger—an article that is worse than worthless, as it reduces the value of everything with which it is incorporated; while, along with oxygen and the countless millions of microscopic little zymotic bodies that float or swim in the atmosphere at this season like shoals of herring in the ocean, it plays the very mischief with the animal products of the farm into the bargain. And this, too, is not all; for sending up beef and mutton to London on their own feet (as some do to obviate such losses) at this season, makes the matter if possible worse for the farmer. Droves of fat oxen and sheep, for example, in the streets of the metropolis, panting, with their heads hanging and tongues protruding from their mouths, like a pack of hounds after a long and hard run, may be getting rid of latent caloric with a vengeance, but it is neither cooling down the beef and mutton to the proper temperature, nor preparing it for that process. Such a system of refrigeration may be in harmony with the Æsop fable (hot and cold blast) of the old blue-frocked school; but it is not only now out of date, but equally derogatory to the professional character of all who are connected with it—farmers, salesmen, butchers, and consumers—the latter for its toleration.

With the form, construction, and management of the landowner's ice-house at the castle, most farmers are familiar. Those belonging to salmon fisheries are equally well known. So are those belonging to ice companies in most of our large towns, for the storing and preservation of ice for sale.

Farmers, however, require an ice-house for a purpose somewhat different from any of the above examples, and hence it must needs be differently constructed. Ice may even be dispensed with altogether; and in some southern localities, where the winter is often so mild and open as to render it difficult to get a supply of ice for an ice-house, it may be prudent in such cases to make provision for doing without it (natural ice); but in most places it is so easily and cheaply got, as to turn the balance of economy greatly in its favour.

The ice-house and cooling room for the setting of newly-slaughtered carcases should be erected together—the former being either under the ground-floor of the latter, or closely adjoining it. In practice, the nature of the subsoil and locality will determine which plan is the best. As milk, cream, and butter intended for market should never be cooled in the same room with pork, beef, or mutton, the ice-house may be situated between the dairy and the cooling-room for setting carcases, either for market (as beef or mutton) or home curing (as pork). The common form of ice-houses is that of an inverted cone, drained from the apex: this form permits of the interior being easily lined with a layer of straw. But a long, narrow building, in the form of an inverted prism arched over, would permit of the covering of the interior with straw and the drainage of the ice-house equally as well as the old form of an inverted cone. This old plan of a narrow bottom is not, however, essentially necessary; for, if spring water or rain water at a thermal temperature is kept from the walls below, and the heat of the sun from the top or outside above, there is no necessity whatever of a muddle of straw within. If the walls below are kept cool, they may be perpendicular; and, we may add, if they are not kept cool outside, then straw, although a bad conductor of heat, is not to be relied upon inside. In examples therefore where there is spring water below, the more advisable plan is to build a double wall above ground, filling the space between the two walls with charcoal or sawdust, and then to cover the outer wall with a sufficient mound of earth, so as to keep out solar heat.

Less permanent and less expensive ice-houses may be made by covering any old house with a thick thatching of straw, the floor and inside being also covered with the same kind of material (straw); or a temporary ice-house may be made in the heart of a straw or hay-stack. In such cases, ample provision for the timely removal of water from the ice is essentially necessary, otherwise it will melt the ice in contact with or immersed in it. To the young agricultural tyro or student we may observe that the water in an ice-house proves the presence of caloric—*i. e.*, the ice, by absorbing caloric, becomes fluid: hence the removal of the water produced by the melting of the ice is the removal of heat. Such is the simple science involved in the drainage of an ice-house; and its practical importance will readily be understood.

Ice-safes are of various sizes and styles of workmanship, as for the cellar, pantry, hall, or even for the dining-room, and may be had of most ironmongers, at from £2 and upwards. In principle of construction an ice-safe is simply a box within a box, a small space between the two being filled with some non-conducting material, as charcoal, wool, &c. The outer box, or chest, is commonly of painted wood; the inner one of zinc, galvanized iron, or white metal, having a wooden lid, covered with woollen cloth. The two are so formed as to have the appearance of only one box, or trunk, with two lids, and four short castor-feet, like a table, one at each corner. The ice is put in the bottom of the inner box, over which there are sliding and perforated shelves for holding, cooling, and preserving wines, fruits, and provisions, without permitting them to come in contact with the ice. More expensive ice-safes are in the form of a chest of drawers or wardrobe, the interior having shelves, and a separate apartment for the ice. A farmer who has the command of ice, and who knows what he is after, can get his carpenter to make a substantial and useful ice-safe for little money.

In the United States of America cooling and setting-rooms are sometimes made on the principle of an ice-safe, as above, being a house within a house, the space between the two walls being filled with charcoal, also the space between the roof and flooring below. The ice is kept under the perforated floor, or grating, of the cooling-room. They are termed ice-houses generally, and are chiefly used for cooling pork and beef intended for curing and exportation, as they cool down the meat rapidly, and thus prevent tainting. In 1864 a project of this kind was patented in this country by Mr. Thomas Harriss, of Calne, Wiltshire, as a communication from Mr. George Harris, of the United States. The specification is "No. 2,995;" short title, "Rooms for curing Meat." But there is no novelty in the principle, as hundreds of old patents might be quoted of a similar character—Keith's, for example, which was reduced to practice in 1854, in London. We may also observe that there are several hundred patents in force at the present time, in connexion with our subject, but without throwing any impediment in the way of landowners and tenants erecting suitable ice-houses, ice-safes, vapour-safes, and refrigerators.

Instead of using ice directly in the cooling-room, as above, another plan is to force cold air into the cooling-room by means of a fan, bellows, or pump, and to keep out heat either by double walls, thatching, or evaporation. In 1864 a Mr. Joseph S. Richardson, of Waterford, Ireland, patented a project for "preparing carcases for curing," by throwing into the cooling-room not only cold air, but that air loaded with certain antiseptic properties when required. His specification is No. 876 (1864). We might quote other examples from the same year (1864); but the annual crop of patents under refrigerators, freezing and cooling, has of late years been so abundant as to render it impossible to do anything like justice to their merits within our narrow limits, or even to make a further selection.

Air may be cooled by passing it through pipes lying upon the top of or imbedded in the ice of the ice-house. As so much ice will be melted in the process of cooling, provision must be made for the immediate removal or drainage of this water, so that the position or laying of the air pipes in the ice-house, so as to reduce the consumption of ice to a minimum, is therefore a very nice practical question. And this is not all; for in the warm moist weather of summer the atmosphere is always greatly loaded with moisture or vapour, which will be condensed in passing through the pipes, and the water thus formed requires likewise to be drained off. The process is thus of a two-fold character; for the air is both cooled and dried; and each of these two effects produced is essentially necessary in the setting of newly-churned butter or carcases of newly-slaughtered animals. The current of polluted air produced by butchers on the plan of Æsop's fable is only dirty condensed air—not pure dry air. We have even met with blue-frocks in the British capital so far behind in the philosophy of their craft as to propose drying the air by means of fire, hot bricks, &c.? !—moist air being very injurious to meat, more especially during the process of cooling and setting carcases, as it takes off the "bloom," or, more correctly speaking, prevents the bloom rising. The better-informed, however, are perfectly aware that the cold frosty air of winter is drier than the blowing hot and cold of summer; and that they cannot enter into competition with farmers in getting up "the bloom," if the latter know the market value of their meat, and how to give it the attractive selling appearance so highly prized by the first-class butchers of the metropolis.

Three things have thus to be closely considered: The removal of as much heat as possible from the pipes before they enter the ice, so as to economize the consumption of the latter (ice); the condensation and removal of as much vapour as possible from the cooled air before it enters the setting-room, so as to dry and purify it; while the heated air and moisture from the cooling, drying, and setting carcases require to be drawn off, from the top of the setting-room.

Flat pipes give off heat faster than round ones, and small pipes faster than large ones, as small pipes present a greater heat-abstracting surface, while they admit of being made thinner. If therefore there are a number of small air-feeding flat pipes, and if these are taken up the sewer that drains the ice-house, passing under the grating in its bottom, and are then led along the grating immediately under the ice before they are allowed to enter the ice upwards at the sides towards the setting-room, a large proportion of the latent caloric will be removed from the ingress current of air before it enters the great body of the ice, so that very little melting will afterwards be experienced.

Another plan, where there is an abundant supply of ice, would be to pass the feeding pipes up an accessible long wooden trough full of broken ice, and well-drained fresh ice being supplied from time to time from the ice-house. On their egress from this trough the feeding pipes might then pass either up through the ice at one or both sides, or enter at the surface of the ice, passing round the sides, from which any water from melting ice could be drained off as fast as produced; or, instead of ice in a wooden trough, the water drained from the ice-house might form a well at a lower level, so that if the air-feeding pipes were to make a circuit or two in this well the air in them would be cooled to nearly the same temperature as the water in the well.

The improvements which have been made of late on the steam engine have given rise to innumerable plans for the rapid condensation of steam, so as to economise and purify water and protect boilers. With these plans, or many of them, the reader is doubtless familiar. They differ in several respects from the condensation of vapour or steam suspended in the atmosphere, and its removal along with other impurities with which it may be contaminated, so as to cool, dry, and purify it for the setting-room; but there is, nevertheless, a close similarity involved in the two condensation and purification processes worthy of attention.

Vapour which may remain in the cooled air after it has, in a forced and condensed current, passed through the ice-house pipes, may be thrown down in a condensing chamber in the form of water with other impurities; the air, after it is thus purified, being allowed to enter the cooling-room for cooling and setting the meat, and from this condensing chamber the water can be drained off as fast as it collects. With nothing to break or agitate the current of air passing through the pipes at a considerable velocity, the greater portion of the vapour would be carried directly into the cooling-room, if no condensing chamber intervened. On leaving the pipe, this current would blow cold and freezing; but, being allowed to expand, it would absorb the heat from the cooling carcase; consequently, the vapour would be rarefied again to a degree approaching that which it had in the atmosphere at the commencement of the cooling process, the result being that experienced by the butcher—the discoloration of the meat—the rising of the bloom (as in the dry cold air of winter) being prevented by the vapour being chemically attracted to the carcase along with other impurities, as the spores of fungi, &c. The object of the condensing chamber is to produce the dry, pure, keen, cold air of winter, so as effectually to consolidate the meat, and get up its commercially attractive pinky bloom.

Various plans may be adopted for the separation of vapour and impurities from the atmosphere in a condensing chamber—such as forcing or filtering it through a condensing and purifying medium, or over frigid surfaces, thereby withdrawing it in the form of water; or it may be attracted to substances having a powerful affinity for moisture; or it may be thrown down in the form of snow, hailstones, or icy particles; or it may be got rid of by a combination of these processes.

Into the working details of such processes, owing to their number, our limits will not permit us to enter at present. They form a subject which might be profitably discussed by meteorological writers—much more so than the long prophetic bickerings about the future weather.

Instead of a single condensing chamber adjoining the cooling and setting room, a number of small condensing chambers might be made at the bends of the pipes, or at suitable and convenient places and distances along their length. The slower the air is passed through the pipes in the ice, the greater the length of time afforded for the abstraction of the heat; consequently, the lower the degree of temperature to which the cooled air is brought down, and the more effectual is the condensing process performed. It is not so much a large supply of cold air that the cooling and setting room requires as a continuous supply of the proper temperature and quality as to dryness and purity. If advantage is taken of such *data*, the small condensing chambers in question may in character be only an enlarged portion of the pipes, to an extent sufficient to hold condensing material or surface, so as to allow the air to pass through or over it at a slow velocity.

In Ling's patent "ice-safes," or "ice-houses" (patent, No. 10,781, 1845), the vapour is condensed upon the outer surface of the ice-wells, which are situated vertically in the middle of the ice-safe or ice-house, the latter, more correctly speaking, being only a cellar or closet fitted up on the principle of an ice-safe or refrigerator. Mr. George Keith, ice machinist, 55, Great Russell-street, Bloomsbury, W.C. (late Lings and Keith), has made numerous improvements upon the patent of his late partner. These improved ice-safes were exhibited in the Great International Exhibitions of 1851 and 1862, on both of which occasions prize medals were awarded them, as some of our readers will doubtless remember. Since 1854 several of our large metropolitan butchers have had cellars or closets fitted up, on the principle of an ice-safe; while these improved ice-safes are common in our national clubs and hotels—not only in the capital, but in most of our large provincial towns. In examples where the ice-safe has two cupboards there is only one vertical ice-well between them; but where there are three cupboards, as in the largest examples exhibited in 1851 and 1862, there are two ice-wells. In two of the butchers' ice-cellars which we have examined, one—a small chamber leading off from the slaughter-house—has only one ice-well in the middle; the other, under the shop, has two ice-wells. They are made of galvanized sheet-iron, circular, and riveted like the funnel of a steamboat, of the height of the cellar. A small double hatch door opens in the floor above, in at which the ice-well is filled. It is drained from below, as the well of an ice-house. Around the wall of the ice-cellar there are hooks, as in butchers' shops, for hanging joints or quarters of beef, and whole carcases of mutton. Salted parts are kept in tubs on the floor. Around the bottom of each cylinder, or ice-well, there is a receiver, to collect and drain-off the vapour which is condensed upon its surface, and which trickles down to this receiver.

Ice-wells may be constructed in larders, on the above principle of an ice-safe, either for butchers or private families, for preserving meat; but they do not answer for cooling and setting newly-slaughtered carcases, and hence are not adapted for farmers. If the meat is firm and well set when hung up in an ice-cooled larder, it will keep safely until used, coming out as fresh and sound as when put in; but, when put in warm and soft, the atmosphere in such places is too confined and muggy for getting up the bloom. Soft meat can be easily cooled down to the proper temperature, such as quarters of beef and carcases of mutton from the dead-meat market at this season, or badly-set meat from the slaughter-house or shop of the butcher, the quantity being limited to the size of the safe and the consumption of well-ice in the wells. The owner of the largest cellar under his shop, noticed above—the one with two ice-wells—on finding he could cool down meat, and thus check for a time decomposition, bought largely in Newgate the softest and cheapest qualities, in the hopes of driving at the gallop a paying concern; but by so doing, he fell into two egregious practical blunders—first, by putting too large a quantity of meat into his cellar, more than he could cool down to the proper temperature necessary to arrest decomposition: in other words, he put more latent caloric into his ice-cellar than he could remove, with a limited cooling surface, within the limited time which practice placed at his disposal; secondly, he made a mess of the whole, both as to saleable appearance and quality. The Windmill-street experiments gave rise at the time to a voluminous amount of trade gossip, which, we need hardly say, ended unfavourably to the extension of the ice-cooling project, owing to the gross mismanagement in carrying it into effect.

Small ice-safes are greatly more expensive, both in the construction and consumption of ice, than large ones; and those erected in the Metropolis for butchers have hitherto been on too limited a scale for the economical demands of trade. And this, too, is not their only fault; for no attention has been paid to supply them with a pure, dry atmosphere, so essentially necessary to success. Indeed, butchers everywhere, not more in the capital than in our provincial towns, are proverbial for the blind and non-professional manner in which they muddle their meat, in a stinking and steaming atmosphere, more especially in the summer-time. What between smell and the deluging ablutions in shop and slaughterhouse, and the cooling and setting of meat in the dirty, muggy atmosphere thus produced, it is not surprising that it remains soft, and soon begins to get green or to taint at the bone. It is no wonder, therefore, although the more intelligent and enterprising metropolitan butchers are anxious to get ahead of their present antiquated position, that they are turning their attention more and more to the dead-meat trade, and that they would gladly support the proposition of a direct trade with farmers in properly-slaughtered and cooled meat. Many of their slaughter-houses could easily be converted, at no deadly outlay of capital, by double walls, roofs, &c., into excellent preserving-rooms, by means of ice-wells and the other refrigerating and heating apparatus now being brought to bear upon the preservation of meat in summer and winter.

In the cooling of meat in an ice-safe, the latent heat removed passes off with the melted ice, in the drainage of the ice-well. The thin sheet-iron forming the well being a good conductor, the caloric readily passes from the meat to the atmosphere, from the atmosphere to the iron, and from the iron to the ice, melting so much; and the quantity thus melted always corresponds to the quantity of caloric abstracted. But if the meat has been properly set in the country, and comes up to the capital cool and firm, and is put by the butcher into his ice-safe in this condition, the quantity of caloric to be removed is in the minimum. Hence the consumption of ice is also in the minimum; and, consequently, the expense of keeping the meat in a wholesome and marketable state is comparstively nothing to the advantage gained. Those butchers who are just now studying the subject from a professional point of view will readily perceive that the old objection raised to the expense of ice in ice-safes falls to the ground, under proper management. Hence the practical conclusion.

All ice-safes involve a stagnant atmosphere; and although there is less objection to meat being in a stagnant atmosphere at a low temperature than at a high one, we very much question if the exclusive principle of an ice-safe is that to which butchers should look for the preservation of their meat in summer-time. On the contrary, we aver that what suits the farmer will be found best adapted for them; which brings us to our third proposition—the ventilation of the farmer's cooling and setting-room.

If a continuous blast of pure, wintry-cold air is thrown into the cooling-room in which newly-slaughtered carcases are hanging, it must have an ingress near the floor, and an egress in the ceiling for carrying off moisture and caloric from the drying and cooling meat. The heat may have a tendency to diffuse itself through the room; but as the heated air and steam ascend, a slow current upwards, from the bottom, will carry both off together, through discharge-pipes above. These discharge-pipes should have valves for shutting when not going, so as to prevent an influx of moist, hot air in summer, and cold during the extremes of winter.

Under such conditions, if the solar heat is carried off by evaporation by means of water being thrown upon the roof and walls outside, or if it is kept out by means of a thick thatching of reed or straw, a further supply of cold air would be unnecessary after the carcases are cooled down to the proper temperature and firmness. Practically speaking, as soon as this is effected the meat is ready for being sent off to market, so that it is only under exceptional circumstances that it would be allowed to hang longer in the cooling-room of the farmer. With the butcher, however, it would often be otherwise, and as the consumption of ice would be directly as the quantity of cooled air thrown into the cooling and preserving rooms, it follows that it is only during the cooling process that a supply of cold air is chiefly needed. However cool and firm butchers may get their meat in from the country, it will always, in warm weather, absorb much caloric between the cooling room of the farmer and their shops; while what is not sold during the day will largely absorb solar heat from hanging in their shops; consequently what is not sold to-day has to be cooled down over night for to-morrow.

A continuous supply of cold air, for carrying off the heat and moisture from carcases while cooling and drying, would often be required in the winter time as well as in summer, or we may say at all seasons of the year, with the exception of clear, dry, frosty weather, when ventilation might be more economically effected by other and cheaper means. At such seasons as the latter, the practical difficulty experienced is to keep out frost, especially during a long period of hard frosty weather, owing to the complete abstraction of latent heat from every part of the building. But there are short periods of close muggy weather in autumn, winter, and spring, which is very injurious to meat, both in cooling and preserving; consequently such an atmosphere must be got rid of as fast as possible, by means of throwing into the cooling-room a supply of pure, cold, dry air.

There is another description of cold muggy weather, nearly as injurious to the meat as the former, when the air might require to be heated, and afterwards cooled in order to effect the processes of condensation, of vapour, and purification more successfully.

A cheap tent vapour-safe may be made by fixing four posts or standards in the ground in any free, airy, exposed situation. On the top of these place a cistern, for supplying water. Put in shelves below—the lowest four or five feet above the ground. Around the whole throw canvas or a woollen cloth down from the bottom, of the cistern. In the sides of the cistern, near the bottom, let there be a few small holes; in these put pegs, for regulating the discharge—sufficiently loose, when working, to let water ooze out—for keeping the cloth wet; and from this wet cloth the solar heat will be carried off by evaporation, and more effectually when in the sun than when in the shade. The cistern may be supplied with water, from time to time, as required, by means of a small forcing pump and gutta percha tubing.

For small farmers and labourers who have not an ice-house and cooling-room, a vapour safe would be of inestimable value in the summer time, for keeping vegetables and provisions of every kind. Any country carpenter could put up one for a few shillings; and not a few handy small farmers and labourers could knock one together in an evening or two after the day's work was over in the field. The canvas or cloth might be open and overlapping at one side, so as to place the contents of the safe, if desirable, under lock and key.

Such is a general view of our proposition; and those of our readers who have been able to follow us practically will readily perceive that its universal reduction to practice is only a work of time—a period, we may add, shorter than the vast majority of farmers and butchers at present imagine.

ENGINEER.

THE APPLICATION OF MACHINERY TO AGRICULTURE.

At a meeting of the Logie and Lecropt Farmers' Club, held in the Westertou Arms, Bridge of Allan, Sir J. E. Alexander in the chair, the following paper was read by Mr. Finlayson, Pindreich:

Mr. FINLAYSON said—It is needless to say, I crave your indulgence for anything I may bring forward to-night on the subject of discussion, viz., "The most Profitable Application of Machinery to Agriculture." In regard to the thrashing machines, whether plain beater, spike or botting drum, revolving or crank shaker, or whatever plan, small pinions and bevel wheels should be avoided as much as possible. Pitch chains are a very easy method of driving the rollers and shakers, but the first and most important thing to be looked at is a good large horse-shed. First give the horses a good lever power, and the rest becomes easy. Make the horses strong, and you gain the additional advance of a large outer wheel and pinion, large spur wheel and pinion, large second power and drum pinion, and you thus make four horses do the work of six with everything the other way. It may be laid down as a general rule that small pinions are ill to turn, and a great drawback to thrashing machines; but the only way to remedy this evil in many cases, and keep up the required speed, is to begin at the beginning and give the horses a good leverage. Not a few of our mill sheds are just as they were when the flail was first hung over the couples as a thing of no use, and was succeeded by the thrashing mill, and it is no wonder they should be a little antiquated. Some of them in the district, where there is a good deal of thrashing to do, are not 23 feet within walls, whereas there should be no shed less than 33 feet. I have had a long trial of both, and the large one in my experience has all the advantages I ascribe to it. There is room for improvement, too, I apprehend, in the way and manner of cleaning.

our grain. Not a few of our fanners in the district, with little alterations in detail, are the same as when this "terrible deil's wind" was first found out. The prevailing principle of the old farmers is long blades, about three feet, some of them more. The invention of fanners was no doubt a great affair, however light we may think of it now. A great improvement on the old plan of cleaning the grain between the barn doors, or going up to the top of a hill, to catch the passing breeze, and perhaps catch the passing shower instead. But we could not expect these men, geniuses though they must have been, to jump to the best construction of fanners at once, and I find, as any one else may find, by standing behind them, that in these long-bladed fanners every blade has its own blast. There is a lull and a puff as every blade comes round, and they of necessity heavy to drive. The most modern fanners again, which we see taking prizes at shows, are not so long in the blades—somewhere about two feet, and not very heavy to drive; but in their haste to attain perfection, as I suppose, in cleaning the grain, they have filled the whole inside with riddles, so that the wind has next to no chance at all in doing its duty, as it has no way of acting upon the grain, but through and among these riddles, which is far from sight. Grain, you are aware, can only be discriminately cleaned when it is falling, not when it is striking against or resting on anything; and hence the absurdity of blocking up the whole interior of fanners with riddles. Riddles I would have, and riddles I wonder we have not had, in all our mill and hand fanners long ago. But then they should be so placed as not to interfere on any account with the winnowing of the grain. There should only be a slight part of the blast allowed to play upon them, and a foot or more clear below for the wind to act on the grain as it falls from the riddles. I find that wire riddles are apt to get clogged up with corn coats hanging about them, and that pierced iron or zinc is preferable. But to approach perfection in the winnowing of our grain, I would recommend that our fanners be short in the blades and double blasted, that is, that they should have two pair of blades or fans, the one going out when the other is coming in, or working half stroke to each other, to prevent that lulling and puffing that is in all fanners, and to make a regular and constant blow. Three riddles, when properly applied, may be said to add nothing to the weight of driving, and such a form of fanners would give plenty of room below for the wind to act on the grain as it falls from the riddles, while they could be made the same height above and below as other fanners and as easy to drive. To allow the blast to act on the grain, when it is resting on anything, as is too often done, is like striking a man when he is down; it gives him no chance of his life. The strong man is weak then, and so is the strong grain. It is an expensive affair riddling grain by hand, and not every one of our best men can do it. But there is no use for it when it can be done otherwise. For I hold that we are much more able to riddle our grain by machinery than the miller is to sift his meal—and how perfectly he does it, though the one is a much nicer operation than the other. We ought to leave nothing to manual labour that can be done by machinery. I am only speaking in reference to our own district, for many may be, and many are, I know, far in advance of us in this point. Wherever iron can be introduced into our farm implements it should take the place of wood; iron can be used with advantage in harrows on the great proportion of land. On some light soils, perhaps, and hilly farms, they can scarcely be made light enough to stand the obstacles they have to meet with. The old Scotch wooden plough is still in use in some parts of the district, but wooden ploughs, in whatever form, are not thrifty. The "Scotch Rational" can be made in its native form, and as light and strong in iron as in wood. It would then neither cling with summer's drought nor swell and rot with winter's wet—would last generations in place of a few seasons. But two sets of ploughs are expensive and unnecessary, as our improved iron plough, with a plain broad level sock and a straight coulter, will do winter ploughing equally as well, if not better, than the other, and be as easily drawn. Very short, convex, sharp turned, hollow-breasted mouldboards are better for scooping loose land than ploughing it; while a medium length and twist will do fair work on all soils, and prove more generally useful. Wheels, when rightly attached, make a plough very easy to guide; and though a good man at a ploughing match may make better work without them, a very inferior ploughman will, with a day or two's practice, make superior work with them. And it would be a great saving of our ploughmen's bones were wheels more used than they are. What we call grub harrows, when well made, have been found exceedingly useful in tearing up and loosening land that has to be often rolled in the breaking down; and when land is foul for taking weeds to the surface. The grubber was thought at one time to take the place of the plough, but now it will have enough to do to keep its own place. A turn of the grubber may sometimes be better than a ploughing; better for keeping in the moist, for the sake of a braird in dry weather. But there is a danger in going too far, as nothing but the plough can turn the soil over thoroughly to the influences of the atmosphere, which influences, although we have them for nothing, are often more enriching to the soil than the best and most costly manures we can apply. Water power may be said to be the cheapest of all known powers when conveniently got; but, unfortunately, where most grain is grown, and most needed, it is difficult to get. And it appears to me questionable whether it would be profitable to keep a steam engine for thrashing alone, for these reasons among many—That we often can't get on our land for weeks together, and in such seasons it is an advantage for our horses to have thrashing to do; and with a good going machine much of our thrashing can be overtaken in such seasons. Besides, we have the portable engine and thrashing machine to apply to in a strait, which does all the departments of the work well, and is not long in making a slap in the barn-yard. True it is, that in the Lothians, and many other districts, you will see few farm steadings without the engine stalk towering above all around. But in many places the straw is sold, and dung is bought, so that when the horses are not on the land, they are on the road. Other places, from their proximity to coals, or the dry texture of their land, that can be wrought on at any time, may account for the difference; but in the vales of Monteith and Stirling the straw is generally made into dung on the farm—the coals are expensive, and the land stiff; so tenacious much of it is, that one day's work on it, when not in trim, would tell on it for a rotation. Steam power has done much for the world, but comparatively little as yet in the cultivation of the soil. Till recently we used to see cotton factories and mills of all sorts in out-of-the-way places—besides burns, and streams, and rivers; but taking advantage of steam power, we now see the manufacturer birring at his mill, without any such restraint, anywhere and everywhere—in the midst of large cities, on the quays and banks of navigable rivers, where goods can be imported and exported to and from all parts of the world; and we farmers can only say we wish we could get on that way. We hope we will get the same advantage of this giant power. The difficulty of applying steam to agriculture is too manifest, from the time it has taken to introduce it. Could it have been done as easily, and with the same advantage as in the other case, the steam engine would have been snorting on every farm. There has been no such indefatigable energy or ingenuity, and I should say philanthropy, shown in introducing steam to factories as to farms, for the fact is, it was not needed. The manufacturer, as I have hinted, has only to erect his work, set down his engine in the place and position required, and away it goes, saying to itself, we may suppose, this is the place for me.

> I'll drag long trains, inclines I hate,
> Sometimes I'll stick in spite of fate;
> Running off rails, or into trains,
> I sometimes dash out people's brains,
> And sometimes, too, my own.
>
> I'd cultivate the soil, 'tis play,
> But can't drag ploughs a mile away;
> That long wire rope, go tell the folks,
> Is just like shearing Samson's locks,
> It clips me of my power.
>
> How fearlessly I'll plough the ocean,
> Though all against me seem in motion—
> Though winds loud lash the waves to foam,
> But here I say I am at home—
> But here I am at home.

It is no doubt difficult to estimate the benefit manufacture and mechanics have derived from the perfection to which they have brought their machinery, but no one thing in our day, I am persuaded, has done more to advance their interests than steam power. It is like the root from which other improvements have sprung—the trunk on which they grow and flourish; and we, as landlords and tenants whose interests are so linked together, ought to strain every nerve to have this wild young horse brought into their service. Most people like a young horse to be bold and forward a little in the breaking-in. They say there is something in him. If this holds true then you may depend there is something in steam, and we ought not to be frightened for any pranks and cantrips that may take place at first, and we should be encouraged to persevere from the advance already made in our own, and from the success that has attended the steps of this bold horse—this noble power—in every other department of industry. It has not yet been established, it is true, that cultivation by steam is cheaper than by horse power, but such a comparison is premature. It is certainly not reasonable that a power that came into existence yesterday should already cope with another that has been in existence since the time when Adam was a young man or soon after. It is not so long since we have got quit of the gadman for cleaning the ploughing and guiding the horses; some here may have used him in their younger days; so give this youthful power time—I would not say four or five thousand years, but four or five years—and we will get the gadman paid off here too, and many other seeming mountains that stand in the way of progress. There have been great improvements made since this young wild horse was first yoked in our district, which should be noticed, but I must pass on. It may be observed here that this fiery horse eats coals, not corn, and eats and drinks only when he is working, decent fellow that he is; while our other horses eat and drink, and must be attended to, work or no work, lazy fellows that they are—are they not? No doubt the present extensive form of application of steam power is beyond the reach of the great body of farmers, and may have frightened some and grieved others; but it was the larger and wealthier farmers and the more spirited farmers that took the lead in the movement, and it was such forms they required, and no one need be concerned, as it can be brought down to any size or form. I only wish I saw it brought out in a form suitable to a farm of 100 acres or so: all then would be able to judge of its capabilities and cost of application in their own case. But I must say that I don't like the idea of the engine toiling so far from its work, shorn of half its power; for recollect that an engine of 12-horse power, so far as I have seen, only drags two or three ploughs, the work of four or six horses. It is of course easier far to find fault than find a remedy. But allow me to say, for the sake of argument, would it not do to have the engine, instead of standing at the end expending half its power doing nothing, traversing our fields, short-angled corners, and fields of all forms, with a cultivator somewhat of the principle of a clod-crusher or Norwegian harrow to travel on, in place of the hind wheels. The fore wheels for guiding the engine would be the only compressing weight on the soil, and would do less damage than the pokering and dabbling of the horses' feet. Supposing there were three cultivators, the one going deeper than the other as they came back. The depth could be regulated by wheels. It would be like tooth and pinion for taking the engine over a height, the wheels would not skip round and leave the engine standing helpless, and those who had knolls on their farm would not need to consider themselves excluded from a share of the advantages of their more favoured brethren in the plains. But, without joking, if a principle somewhat like that described would do, then the gadman, viz., the wire rope, porters, anchor, attendants, the laying and lifting of this gear, would be dispensed with, and this magnificent power brought within the reach of every one. I see many difficulties to the plan, but a great many advantages if it would do. At all events, it is by stating our views and discussing such topics that we can endeavour to help on improvements that so much interest ourselves and the community. Some of the other members will give us the advantage of their experience with the reaping machine, as your patience must be already over-taxed. Allow me to observe, however, that though the reaper has much to contend with in our variable climate, it is gratifying to see the headway it has made against obstacles, seemingly insurmountable, since it came into use. Those only who began with it can estimate the advances that have been made. The real improvements, or labour of effecting them, cannot be appreciated by a casual observer. Many thought, at one time, that when we got the length of a "manual back delivery," we could get no farther. Some machines at first, when the knife got the least blunt, would come to a dead lock for want of power, although driving nothing but the knife; but now, from the knife being made lighter, of better stuff, kept sharper, and other parts made more perfect, we find there is power not only to drive the knife, but a large side delivery reel into the bargain. Heavy cumbrous machines cannot be expected to be handy or profitable in average circumstances, as, from the laid state of our crops generally, they can only be cut one way, and such machines are about as difficult to take back empty as others are to bring forward full. I am not aware whether our last year's exhibition has brought out any new machine, but if it were the means of perfecting those already out, and bringing them into notice, which no doubt it has, from the number of self side-deliveries ordered in the district, our labour has not been altogether thrown away. The perfecting of the reaper is becoming more and more important for the efficient and profitable harvesting of our crops, and calls for more attention than it receives from farmers' clubs. It is not like an implement that is used all the year round, that can be repaired or improved at any leisure time. It would require to come into the field like a warrior armed to the teeth —without a weak point or flaw in its equipment. The soldier may find out the defects of his armour in the battlefield, but that is neither the time nor place for repairing his loss. So it is with the reaping machine. The harvest field and throng of harvest is neither the time nor place for inefficient machines, or for repairing their defects. Stoppages are a great loss and annoyance, but this evil is lessened, you will observe, by the side-delivery, as it can be wrought at any distance ahead of the binders, which the back delivery cannot. Neither is there any time lost by the binders going backwards or forwards, as each has his own row to bind from end to end; consequently more work can be done. But the advantages of the side delivery come most prominently out in the bean field, where the lifters are dispensed with altogether. Self side-delivery is the great point of perfection we have long striven to attain, and it is most gratifying to see it brought out so completely in so many different ways, each throwing a lustre on man's powers of ingenuity and perseverance.

After the reading of the above paper the various suggested improvements caused considerable discussion.

SOILING CATTLE.

This practice is, on most arable farms, especially where provision is made of crops near the feeding-boxes and yards for carrying it out, a profitable method of increasing the store of manure upon the farm. Where Italian rye-grass and lucerne and clover, liberally treated, are near the feeding-house, cattle can be fattened during the summer months more cheaply than during winter, with at least as great advantage to the fertility of the farm. The practice is very warmly advocated in the earlier editions of "Young's Farmers' Calendar," as follows: "Enlightened farmers have in many districts adopted this system for horses, but still reject it for cattle; and it will probably take a century to render it as universal as it might be, most profitably. The objections to it are not of any importance. It has been argued that the expense is an object, and that cattle will not thrive so well, nor will cows give so much milk, as if fed in the field. That the expense is something cannot be denied, but that it amounts to anything considerable is contrary to fact. Mr. Mure fed 240 fatting oxen in sheds, through a whole summer, by the mowing of one scythe. If the attendance upon the beasts be added to this amount, the whole will evidently come to a sum which, when divided either per head or per acre, will be so low as to do entirely away with this objection. As to the question of thriving, the assertion has been made, as far as it has come to my knowledge, without a trial, and is consequently mere theory. The beasts mentioned above were all sold fat at Smithfield, and did as well as similar beasts had done fed abroad in the most favourable seasons, and better than in any summer not remarkably favourable. I practised it for several years together very carefully for fatting cattle, weighing alive periodically, both while in stalls and when at grass, and I found that in soiling they throve better than when abroad. If the world will reason upon every question of farming, they should do it without prejudice, and then their reason would, to my apprehension, agree with these facts. Everyone knows how tormenting flies are to cattle when abroad: ride into a field in summer to look at stock, and where do you find them? Not feeding, but standing or resting under trees, in ponds, in rivers, and, if there is no better shelter, in ditches under brambles; in a word, anywhere but feeding in the open air. What they graze is in the morning and evening; and in many cases they lose in the heat of the day all they gain at those moments of their comfort. To this superiority we must add that of the main object, which is the dunghill. In one case this is accumulated in a degree even superior to what is effected in winter; in the other, it is scattered about the pastures, and nine-tenths of it carried away by the flies, or dried almost to a *caput mortuum* by the sun. The prodigious superiority of thus raising a large and very valuable dunghill in one case, and none at all in the other, ought to convince any reasonable man that there is not a practice in husbandry so decidedly superior as this of soiling, were there not one other reason for it than what have already been produced. Those farmers who have given particular attention to the state of farm-yard manure, as it is made in winter or summer, and to the efficacy of both, can scarcely have failed to remark that the superiority of the dung arising from any sort of stock in summer is very great to such as is made in winter from stock no better fed. Cattle, when soiled upon any kind of good food, as tares, clover, chicory, lucerne, or grass, make so large a quantity of urine as to demand the greatest quantity of litter; the degree of this moisture, in which their litter is kept, while the weather is hot, much assists a rapid fermentation. On the other hand, when I view the common spectacle of a large yard spread with a thin stratum of straw or stubble, and a parcel of lean straw-fed cows wandering about it, I see the most ingenious way of annihilating litter without making dung that the wit of man could have invented. Burning such straw upon the land before sowing turnips would be an application not inferior. Cows, thus managed, are amongst the most unprofitable stock that can be kept on a farm. With the best food and management, their dung is inferior; but thus kept on a wide expanse of thin litter, well drenched in rain and snow, running to ponds and ditches, they destroy much, but give little. There is, however, another fact of equal importance that the food given in stalls or boxes goes so much farther than it will do when grazed where it grows; and when we recollect the old remark, that a beast feeds or consumes with five mouths, we shall not be surprised at this fact. A greater stock may thus be supported by the same farm, in one system than there can be in the other. Two circumstances demand attention, which if neglected will considerably lessen the benefit to be derived from soiling: the one is to have a plentiful provision of litter, and the other much care in feeding—to give the beasts but little at a time. If much be tumbled before them it heats, they pick it over, and the waste may be great; and if a cart be left in the yard loaded, the contents heat, and then cattle will not eat it. A certain degree of care is necessary in everything, and in nothing more than in feeding all sorts of cattle. As to litter, it is an object of such importance that provision for the system should be gradually made through the winter, if corn enough be not left for summer-thrashing to supply the beasts. All dry vegetable matter capable of providing a dry lair in stalls or boxes—leaves, in woodland countries; fern, dried peat, &c., should be thus collected against the summer months. An enterprising, vigilant farmer, when he has such an object as this in view, will exert every nerve to be prepared for a system the profit of which will depend so much on the care previously taken to be well provided with litter of some sort or other. The first crops that will be ready for soiling are the rye, lucerne, and the Italian rye-grass, and the Trifolium incarnatum, which may be supposed to last all the stock till the first-sown winter tares are ready, when the lucerne left uncut should be mown for hay. The second-sown winter tares come next, then clover, to be succeeded by the third sowing of tares, and by the second growth of Italian rye-grass and lucerne. After this come spring tares, and the second growth of clover; and the third cutting of Italian rye-grass and of lucerne may follow. If chicory be applied to this use, for which it is well adapted, it will, on any good land, be mown thrice, and on very good soils four times. The quantity and value of the manure thus made will surprise those who have not witnessed it. Whether the stock be stalled, or fed in boxes, or kept in well-littered yards, covered or open, in divisions according to sort, size, age, fatness, value, or any other rule of separation, if they are fed carefully, have water at command, and are kept clean, all sorts will thrive to the farmer's satisfaction."

THE HARVEST OF EVERY YEAR;

OR,

PLAIN HINTS TO FARMERS ABOUT THE WEATHER.

Although it is not in man's power to secure sunshine or completely to supply the deficiency of rainfall, still there are resources at our command to mitigate the consequences of these deficiencies, or to make amends for them by acting in accordance with the hints of Nature. If a year is likely to be bad for grain crops it will be good for roots, tares, and other food for stock. In such a case we only invite loss if we do not take means to secure a compensation by having recourse to this rotation, supposing we can discover the probability in time for the alteration.

Now, there are numerous facts or classes of facts which enable us to foresee with more or less probability the nature of coming seasons.

I. THE WEATHER AT THE EQUINOXES.

The weather at the equinoxes (21st September and 21st March) is a sign of that which is to follow. If the weeks immediately before and after the autumnal equinox (21st September) pass off almost free from any great atmospheric disturbance, *the temperature will continue higher than usual far into the winter months*.

Such being observed, it will be evident that the deficiency of frost will tell on the soil, and the irregular temperature will prepare unsettled weather for the following spring. The contrary will happen under opposite circumstances.

On the other hand, a calm spring equinox will be followed by a very low temperature for many weeks: the reverse with a boisterous spring equinox, which means a dry spring. The wet and cold spring of the present year (1866) prognosticates a bad or inferior harvest. The rainfall of the country seems already to have amounted to the greater part of the annual average more or less everywhere, whilst the general tendency of the winds is decidedly variable, denoting a continuance of unsettled weather. It would not be a waste of precaution to check the drainage, especially of high-lying lands, against the possibility of dry weather, if not drought, with thirsty winds to diminish the moisture of the soil.

For the great majority of years it seems that farmers cannot expect very remunerative harvests; but the quality of food for stock might be very profitably increased were we to alter the system of cropping, and grow less corn, the cultivation of which is both unprofitable and laborious, as recently observed by Mr. William Scott, at the quarterly meeting of the Galashiels Farmers' Club.

Though grain has got a little dearer this year, it is well known that it is entirely owing to political circumstances, probably of a temporary character, and it is only in years far distant, when the population of this world shall have doubled itself—should that ever come to pass, that there will be any chance of corn ever again rising to the old protection prices: wheat will never again be dear, and beef will never again be sheep. If more attention were paid to the cultivation of roots, tares, and other food for stock, the numbers kept might be greatly increased, and more especially would this be the case if more land were kept in grass. If these hints be taken, the farmer will not be so dependent on the weather as he is at present. By effective drainage we can counteract the consequences of excessive rainfall; but then we should *save the water*—preserve it as a precious thing, against the possibility of having to pay for it at 6d. a pailful, as some had to pay during the last excessive drought. But even more than that: if from the hints we have to suggest it be found that we are likely to have a dry season, means may be taken to stop or check the drainage, which should always be done in spring after a wet autumn, especially in high lying-localities.

By a knowledge of the "climate" or natural temperature of localities, which depends upon their aspect with respect to the sun, and the nature or geological qualities of the subsoil, we should be able to neutralize the consequences of drought by the nature of the cultivation or crop we raise from it.

Those plants which have broad leaves, such as roots, &c., are not so likely to suffer from drought as the cereals, which is another reason why farmers had better turn their attention to food for stock.

II. SIGNS OF THE HARVEST FROM THE WINDS.

Every wind has its weather, more or less influencing vegetation, or interfering with agricultural operations. Consequently this is a subject to which farmers should direct their attention, and endeavour to turn to account what little certainty we may have secured in our knowledge as to the play of the winds. Owing to the want of continuous records of the changes of direction in the wind, but little is known as to the mean prevalence of certain directions during the different months and seasons. No doubt if self-registering anemometers (or instruments for measuring the force and direction of the winds) were used throughout the country, this want might be supplied, but even then the results would scarcely amount to certainties, owing to the many causes which deflect or turn out of their courses the great currents of air as soon as they enter the varied landscape of our islands. Besides, many a wind may blow under a false name; that is, it may be only the return current of one and the same wind—sometimes in an exactly opposite direction. The only means of distinguishing such false winds is, the hygrometer, or dry and wet bulb thermometer (of which more in the sequel), which will accurately show the quality of any wind as to moisture, and therefore enable us to class it accordingly with either of the great currents to which it may belong, absolutely or in composition, namely, the polar or the equatorial, which have their marked and distinctive features. It is the relative prevalence of these two main currents that constitute the winds which mainly influence vegetation.

Whatever, then, may be our difficulties in the inquiry, it is highly desirable that the farmer should have regard to the direction of the wind; for, if we cannot predict for certain the class of winds which we are likely to experience during a certain period, we know that certain winds have certain peculiarities of their own, as regards their degree of humidity or moisture, dryness, tendency to bring settled weather of some kind, whether good or bad; and, therefore, these become very important elements for consideration in predicting the weather. A good trustworthy wind-vane or anemometer, which need not be very expensive, would be a very useful thing to the farmer, as will presently appear; at all events, he should always have an eye to the direction of the wind or its shiftings; for, after all, everything depends upon the winds as far as the crops are concerned. The deficiency or excess of one class of winds at particular periods will forewarn us of results which might otherwise meet us unawares.

From a table drawn up by Mr. Glaisher from observations made at Greenwich, it appears that the average duration of each wind throughout the year is as follows:

				Days.
North wind, mean yearly continuance equal				40.7
North-east	„	„	„	47.6
East	„	„	„	22.6
South-east	„	„	„	19.9
South	„	„	„	34.2
South-west	„	„	„	104.0
West	„	„	„	38.3
North-west	„	„	„	24.1
The air is calm on	...	...	... ...	33.7

According to this summary, the south-west wind is by far the most prevalent, and the south-east the least so. The north and north-east rank next to the south-west winds in point of duration; and there are, on an average, only thirty-three or thirty-four days in the year on which the air may be said to be calm, although, strictly speaking, perhaps there are but very few days, if any, during which the air is perfectly motionless.

Of course, this general average can only serve to give some idea of the regular crop of winds that prevail in our islands. There must be differences in various parts of the country owing to local causes; for instance, at Liverpool, the most prevalent winds are from S. to S.E., which last 54 days, and the N.E. and S.W. winds, which are our longest winds generally, only blow for 24 days at Liverpool, where they have the N.E. wind for only 8½ days. We give the statement as we find it recorded by the observers at the Liverpool Observatory, but we submit that the very low and otherwise objectionable position of the observatory is scarcely adapted for accurate anemometry, and therefore it probably records only locally reflected winds.

But westerly winds mostly prevail in England, that is S.W., W., and N.W. winds; and it seems that this fact accounts for the tendency of the wealthier population to move westward or towards "the West-end," because the air there is freer from smoke, &c., the prevalent westerly winds not only driving back the smoke of the City or "East-end," but carrying to it the smoke of the West-end. Of course, it is the same with exhalations, and so the westerly wind keeps the West-end healthier as well as makes it "respectable." We may observe that in east winds—owing to the greater density of the air, the smoke and exhalations of both East and West-end rise higher, and so each gets rid of a greater part of the nuisance.

Curiously enough, it is the same in other great cities—Paris, Vienna, Berlin, Turin, St. Petersburg, Liege, Caen, Montpellier, and almost every other capital or large city of Europe—where the best districts are in the *west*, with the same results. Moreover, it was the same at Pompeii and other ancient cities, and the same may be observed even in small towns and villages throughout this and every other country in the northern hemisphere. Thus, if instinct did not lead to this preference, it may be satisfactory to know that for once, at least, fashion is right in its requirement.

According to the Astronomer Royal, there are only eight points from which the wind ever blows steadily for any length-ended period in England. It never blows at all directly from due south; the two most prevalent winds are the S.S.W. and the W.S.W.; the S.S.W. invariably bringing rain, the W.S.W. accompanied by dry fine weather; between W. and N.W. there is another point of duration, also between N. and E., another between E., and S.S.W, which, with N., W., and E., make up the eight points as above stated.

This statement accords with our observation, and we believe it will be found generally correct, that the abovenamed winds S.S.W. and W.S.W., winds blowing between W. and N.W., between N. and E., between E. and S.S.W., and N., W., and E. winds are remarkable for their continuance.

Now, it is evident that the farmer can infer the consequences accruing to his crops with some degree of probability at the commencement of any of these winds. Those which blow from the left side of the compass will be more or less wet, whilst those that blow from the east side will be generally dry. In general, the stronger the wind the longer it will continue.

The wind usually turns from N. towards S. by E. quietly, and without rain; but returns to the N. with a strong wind and rain. The strongest winds are when it turns from S. to N. by W.

After a long continuance of westerly winds, with wet, a shifting by the N. towards E. may be expected, between which points there will be a wind of some duration, with dry cold weather, as may probably be expected after the late unsettled weather, followed by variable winds and heat.

If the wind turns to N.E., and continues two days without rain, and does not turn S. the third day, and there be no rain on the third day, we may infer its duration, and it is likely to continue N.E. for eight or nine days, all fair, and then to come to the S. again.

Fair weather for a week, with a southern wind, is likely to be followed by a great drought, if there has been much rain out of the S. before.

If, in unsettled weather, the wind veers from S.W. to W., or N.W. at sunset, expect finer for a day or two.

It is a very old saying, that when the wind turns against the sun, the contrary way to the hands of a watch, the weather will be wet and stormy. Whether stormy or not, it will then be unsettled, and thus be prejudicial to the crops.

Now, this well-established maxim, besides being applicable to any period of time, seems to apply equally to the entire year. It will, we believe, be found, without hardly an exception, that when the number of these retrograde or backward revolutions have nearly equalled or exceeded the revolutions of direct motion in any year, that year has been characterised by stormy and bad seasons; and that the opposite effect is observed to take place when there has been a large preponderance of direct over retrograde motion. From 1849 to 1861 inclusive (thirteen years), the vane made 166 complete revolutions more in the direct than in the retrograde motion, or, on an average, nearly thirteen revolutions per annum, which shows the sequence or regular shifting before given. In all this interval, two years only, 1853 and 1860, gave a contrary result, and that only to the total amount of two revolutions in excess the wrong way in each. Now, the harvest of 1853 was certainly below the average, and so was that of 1860, which was especially characterised by stormy weather; so was 1846; and we may expect the same next year (1867) a bad or inferior harvest.

In other words, the *minimum* of direct motion appears to be reached at every seventh year, which may be termed the Sabbath of the land, when "it rests from its labours."

The maximum of direct motion, indicative of good years for the harvest, occurs at periods equidistant from those of the minimum, or at three-and-a-half years from each minimum, and still seven years apart. Thus 1863 was a good year, the crops being returned everywhere as "over the average," "above the usual yield"—in fact, a maximum harvest, the like of which we may expect in 1870—the intermediate harvests being either average or below it; and this, we think, is indicated by the behaviour of the vane—that is, the rotation of the wind—from January to June. Continued backing of the wind during spring is a bad prospect for the harvest; for it means unsettled weather.

The following is the record of Osler's anemometer from the year 1841 to 1860 (inclusive), in which year the wind made rather more than two retrograde rotations, or in the direction of N., W., S., E., N. The letter D denotes when the wind turned in the direction N., E., S., W., N.; and R when in the opposite, or N., W., S., E., N.:

The vane made in the

Year.		Revolutions.
1841	... ...	D 5.4
1842	... ...	D 13.1
1843	... ...	D 20.7
1844	... ...	D 21.7
1845	(10½ months) ...	D 8.9
1846	... ...	D 1.8 (minimum)
1847	... ...	D 11.0
1848	... ...	D 12.1
1849	... ...	D 23.3
1850	... ...	D 15.9
1851	... ...	D 19.1
1852	... ...	D 8.8
1853	... ...	R 1.9
1854	... ...	D 6.8
1855	... ...	D 10.8
1856	... ...	D 16.1
1857	... ...	D 14.7
1858	... ...	D 24.1
1859	... ...	D 14.0
1860	... ...	R 2.1

The Astronomer Royal suggests that the explanation of this septennial cycle, or period, must be in a "periodical throb of temperature from the interior of the earth;" but, supposing that wind-currents are influenced generally by temperature and by the action of agencies *exterior* to the earth, the fact of "a periodical throb" from the interior of the earth would hardly seem to be a true cause for changing air-currents (unless it were local, like a volcanic eruption), if stated by any ordinary authority; but, coming from Mr. Airey, it must, of course, be taken to be important.

As to particular times, it has been observed that in t space of fourteen days, or half the lunation, the winds o dinarily make an entire revolution, and blow successively fro all points of the compass. At new moon, if the wind be nor or northerly, it passes on to the east in a few days, then to t south, and so on to the west, and returns to the north abo the full moon, with settled weather. In unsettled seasons, before remarked, the winds will often vary, and run a litt backward, apparently against the course of the sun; but th seldom veer quite round in this manner, stopping at some i termediate points.

The following table gives the relative prevalence of the d ferent winds during the year, in days and decimal parts of day, as observed at the Royal Observatory at Greenwich; a it may serve to give an idea of their play, if nothing more:-

	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Cal
January......	3.0	3.3	0.8	2.2	4.1	9.8	3.5	1.5	2.9
February ...	3.0	3.6	2.1	1.3	3.0	8.0	2.9	2.0	2.6
March	3.7	4.1	2.5	2.1	2.6	7.7	3.3	2.8	2.4
April.........	4.0	6.1	3.5	2.1	2.4	6.3	2.6	2.3	1.9
May	4.3	7.0	2.5	1.7	2.7	7.6	2.0	1.3	2.0
June	3.3	3.6	2.2	1.7	2.2	9.9	3.7	2.1	1.6
July	3.4	3.7	1.2	0.6	2.7	10.6	4.0	2.5	2.5
August	3.0	3.0	1.2	1.3	3.0	10.5	3.9	2.0	3.4
September...	3.6	5.3	1.9	1.7	2.0	7.3	2.6	1.5	4.4
October......	3.1	2.5	1:2	1.8	3.4	9.1	4.3	2.1	3.7
November ...	3.8	3.6	2.1	2.0	3.4	7.7	2.1	2.2	3.3
December ...	2.7	2.1	1.8	1.8	3.0	9.9	3.9	2.1	4.1

As to the most important matter—whether we are likely t suffer from drought or not in any year—we believe that the is no chance of drought if the winds on the left-hand side the compass, including south, do not greatly predominate b yond the number of days recorded in the above table fr December to March.

Steady winds from the right-hand side of the compass du March, in excess of those from the left, will never, we beli be followed by drought, but, on the contrary, by genial w ther and an abundant harvest. "A dry, cold March nev begs bread." "A wet March makes a sad autumn."

If the wind be east or north-east in the fore part of t summer, the weather is likely to continue dry. If the wind b westward towards the end of summer, then will it also contin dry. In low-lying lands, but with a good sunny aspect, a co and windy May is a good prospect for the harvest: hence t special proverb :—

"A cold May and windy
Makes a full barn and findy."

Much wet in May is worse than excessive drought: hen the proverb :—

"A May flood
Never did good."

If the last eight days of February and the first twenty d of March are for the most part rainy, then the spring a summer quarters will be so too. It is said that a great drou always enters at that season. Obviously, this axiom is c nected with the observation respecting the spring equi before-mentioned; but we believe that the boisterous or c weather of that period will be found to be a safer sign th wet only.

Generally, a moist and cold summer portends a har winter.

A dry, hot summer and autumn, especially if the heat an drought extend far into September, portend an open beginning of winter, and cold succeeds towards the latter part and beginning of spring.

A warm and open winter portends a hot and dry summer, or if not hot, at all events a dry one.

Birds that change countries at certain seasons, if they come early, show the temper of the weather, according to the country whence they come—as, in winter, woodcocks, snipes, field-rakes, &c., if they come early, show a cold winter; and the cuckoos, if they come early, show a hot summer to follow.

A serene autumn denotes a windy winter; a windy winter, a rainy spring; a rainy spring a serene summer; a serene summer, a windy autumn; so that the air, says Lord Bacon, "on a balance, is seldom debtor to itself; nor do the seasons succeed each other in the same tenor for two years together."

In the absence of an anemometer, farmers should note the shifting of the winds as shown by an ordinary vane or weathercock. Care should be taken, however, that the vane be placed in as open and elevated a position as practicable, so as not to be influenced by indirect or reflected currents of wind. Nothing is steadier than an elevated vane, such as that at the top of the Cattle Market at Islington, and we wonder why that elevation, or the top of one of the great hotels so long empty, has not been converted into a regular meteorological or weather-observatory for the guidance of the farmers. Furnished with the usual few instruments required, and attended to by a competent observer, such an institution would be of great aid to those who are striving to collect the facts from which they have to answer the numerous inquiries made to them by farmers and others from all parts of the kingdom. If the proprietors of the Cattle Market will only take our hint and put it into execution, there can be no doubt that in a few years the science in which they and all of us are so much interested—as connected with the greatest of our material interests—will be greatly promoted. Besides what is going on below near the ground, it would be a great aid to ascertain what is taking place in the current of air some seventy or eighty feet above, or at a point not so likely to be influenced by casual causes of error.

III.—THE TEMPERATURE OF THE SOIL.

In the previous sections we have drawn attention to a variety of signs, whereby the nature of coming seasons may be known with more or less probability; and it is evident that we lay the greatest stress on the necessity for studying and observing the winds; for, from whatever cause they may proceed, all of them directly influence vegetation for good or for ill, because *every wind has its weather.*

In a thing of such variety as the wind it may seem a hopeless task to arrive at anything like definite conclusions; but even the variety of the winds admits of an easy and comprehensive explanation, and one that may serve to clear up not a few doubts and difficulties regarding their play in different localities. The wind always moves in the direction of what is called "a great circle;" that is, one which, were it continued, would divide the globe into two equal parts; so that, if the wind proceeded from two of the cardinal points of the compass—that is, either from north or south—it would then retain its name over a great part of the globe. In that case it would blow along the meridian or line passing from pole to pole. But should the wind proceed in any other direction, it will seem very different in whatever distant places it may pass over, unless under the equator when it blows due east or west.

The reason is, because, according to the principles of geography, all the lines (called rhumb-lines) which give names to the winds, between the equinoctial and the poles, are not straight, but spiral lines, like a corkscrew.

For instance, should a wind set out from the equator in the direction of an angle of forty-five degrees—then, in order to retain the same name—south-west, for example—it ought to cross the meridian of every place it passes over, in the same angle. But if it keeps right forward, this is impossible; because the meridians are not parallel, but inclined lines—all meeting in a point at either pole. Therefore, the wind which is termed south-west in one latitude will always carry a different name in another. Such is the explanation of the variety of the winds in general, in addition to the numerous local causes which may give rise to them in all parts of a country. It is therefore obvious that it is in our power to trace, so to speak, the story of any wind, either from or back to its origin; and no doubt this must be done if we ever set up a true theory of the winds. But, fortunately, as before alluded to (and it cannot be too much insisted on), we have a safe guide to the true nature of every wind by means of the hygrometer. With this instrument we shall always be able to prove the true identity of every wind, in spite of its various *aliases.*

But the discovery of this important fact is not all that must be secured for the purposes of agriculture. The winds are constantly fanning the soil; and if they do not warm or keep it warm, they carry away its warmth; and so the relative prevalence of certain winds in various districts must have a great deal to do with their vegetation. Those favoured with the more or less warm winds from south to west will be in a very different condition in this respect to those afflicted by winds from north to east.

Now, whether such is the case must be discovered by direct experiment in the soil itself; and, considering the matter in all its bearings, it is surprising that so little attention has been paid by farmers and gardeners to so important a matter as the temperature of the soil below the surface.

The temperature of the air is admitted to be an important consideration; but the temperature of the ground, which is certainly not less important as regards the health of plants, is scarcely recognized as a necessary point of investigation. We seem satisfied to look at the outer garment without giving a thought to the under-clothing, upon which, for the most part, robust health mainly depends.

Latent heat, as it is learnedly called, or that inherent heat not perceptible to sensation, which exists in things positively cold to the touch, plays a most important part in the economy of vegetation; indeed, many plants can better stand against a cold season than resist the effects of a damp or cold soil; and there certainly is not one that would not have a better chance, during a bad season, for having a warm soil at its roots—warm under-clothing next to its skin. Take the hop plant, for instance. How many more growths have been saved, and how many poor growths improved, since the ground has been paid more attention to by draining, and manuring with a non-conductor of heat—namely, pieces of old woollen rags, which keep in the heat or prevent it from escaping, just as the material does in our own under-clothing! This shows what might be done for other kinds of cultivation.

Moreover, it seems very probable that the various diseases, and blights, to which all plants are more or less subject, proceed from the *deficient warmth about their roots,* so that when the parching easterly and north-easterly winds come upon them, they are not provided with the means of resisting the cold, their vessels shrink, their fluids become vitiated, their blood, so to speak, is corrupted, and inevitable disease is the consequence.

To discover the temperature of the ground below the surface, ground-thermometers are employed. We should like to see such instruments multiplied and planted in every establishment devoted to agricultural pursuits throughout the land. There is not a farm where they would not be highly useful, as they would indicate the precise temperature of the earth at any desired depth below the surface at which the bulb of the thermometer is placed; and thus the farmer would have a guide in *draining his land,* or for regulating the temperature by the addition of a warmer or colder bed, according to the requirements of the particular crop which it may be intended to put in. It seems that the idea of such instruments being too "scientific" for the practical man, has prevented their use; but this is quite erroneous, as there is really no more scientific difficulty in using this instrument than in the thermometer or barometer, as we shall endeavour to show by a few remarks on the instrument and the mode of using it.

Of the amount of heat which the earth annually receives from the sun, some portion is lost by radiation into space, or is taken off by the air or wind in contact with the soil. Some is absorbed by the soil and gradually descends, being conducted by the earth to a considerable depth below the surface. But the heat thus absorbed is slowly given off again during the *Spring* months, to be restored by the sun when the hot season comes round again. The amount of heat thus received and garnered up for the benefit of vegetation, will depend upon the nature of the soil. Those soils which take it easily and rapidly will part with it as easily and rapidly, and it is only by means of the ground-thermometer that we can discover this very important quality of the soil, although, of course, in theory a geologist will tell you at once the capability of your soil as to the receiving and retention of heat. And, for our part, we should never take a farm without having a thorough geological knowledge of its acres, any more than we should buy a horse without knowing its points and defects. As in most things here below, the outside or surface is apt to deceive us; and it is only by going deeper into the soil that we get to know beforehand whether we are likely to succeed with it in any cultivation we may have in view. In the varying seasons, however, the best of lands may prove deficient in warmth, and so we had better have recourse constantly to the ground-thermometer, as it were to feel its pulse like the doctors, in order to see what is to be done for it.

The thermometers for agricultural purposes need not be of that degree of delicacy, nor be sunk to so great a depth as those used for philosophical experiments. Generally it will be found that about two or three feet will be deep enough; but of course this must be determined by the kind of crop for which the ground is prepared. Some of your roots grow to a prodigious depth, although very tiny, and we apprehend that much depends upon securing an adequate amount of warmth to *all* the roots of plants. At all events, look to the temperature of the soil at a sufficient depth to keep all warm below.

If the bulb of an ordinary thermometer, suspended in the air, be coated over with a spherical or round covering of some kind, and the index of such a thermometer be observed, we shall find that it is far less affected by changes of temperature than one whose bulb is freely exposed; and the daily range or difference between the highest and lowest readings during the day will grow less and less as we increase the covering in thickness, but particularly so if the covering is made of some substance that is a bad conductor of heat.

Now, by sinking our thermometer into the bosom of the earth, we arrive at a similar result: the earth will act as a shield, protecting the thermometer from the influence of the great and sudden changes to which the *air* is liable, and causing it to be effected by the heat conducted to its bulb by the earth only. Instruments so placed will then exhibit the exact amount of the solar heat absorbed by the earth at the depth at which the bulb is planted. Care must be taken to bed it up well, or provide it with a shield to prevent rain-water from swamping the bulb; if this happens, the indication will be false, of course.

The temperature at the surface of our globe is, from a variety of causes such as we have mentioned, liable to great and sudden fluctuations; but this is not the case as we get below the surface. The lower we descend the smaller the fluctuations become, until at length we get to the stratum or layer of *invariable* temperature, which varies in different soils from 50 to 100 feet below the surface.

We have before us a table showing the mean monthly temperature at various depths, and in the air, at Greenwich, from an average of thirteen years; and it appears from this table that the full effect of the solar heat received by the earth in the summer months does not reach to the depth of twenty-four feet until about the end of November or beginning of December; and that the lowest temperature is not attained till June, by which time the absorbed heat has been radiated, and the ground receives a fresh supply. The following are the dates of the middle of the warm and cold periods for six thermometers, from an average of thirteen years, at the Royal Observatory, Greenwich:—

Thermometers.	Middle of warm period.	Middle of cold period.
(1) Air	......July 21 ...	January 20
(2) 1 inch underground......	„ 26 ...	„ 24
(3) 3 feet „	......August 9 ...	February 8
(4) 6 „ „	...... „ 25 ...	„ 24
(5) 12 „ „	......September 25 ...	March 27
(6) 24 „ „	......November 30 ...	June 1

From this table, we see that the thermometer whose bulb is only covered by one inch of soil reaches its highest and lowest readings at dates differing only a day or two from the lines of highest and lowest, as marked by the thermometer free in the air. The three-feet thermometer is about nineteen or twenty days behind the instrument in the air; that six feet below the surface is retarded by still more; and this goes on increasing with the depth, until at twenty-four feet the times of maxima and minima are retarded between four and five months.

The range of the mean monthly temperature at the different depths is as follows:—

Thermometer in the air......	29.8	degrees.
„ sunk 1 inch......	25.4	„
„ „ 3 feet......	21.7	„
„ „ 6 „	15.4	„
„ „ 12 „	9.5	„
„ „ 24 „	3.4	„

As before observed, the geological peculiarities of the soi in which the thermometers are sunk will make some difference in their readings, some strata or layers of the soil having a much greater power of conducting heat than others. It takes about five or six days for the impression of heat to penetrate through one foot of earth, subject to slight variations in different soils.

From these facts, the reader will perceive how much warmer the roots of plants are during the winter than the portio that remain above the ground; and the contrast becomes mo striking when the winter is very cold. When we are hard able, with the greatest care, to keep life in some of the plan above, those beneath are luxuriating in a temperature ma degrees warmer—provided they have fair-play, and are over-supplied with moisture, the excess of which makes lan "cold" and ungenial to vegetation. Thus we can understa why the natives of the ice-bound regions of the north reti when their short summer is over, to homes below the surfa of the frozen ground to pass the long winter.

The practical application of these facts and principles shou be easy enough. Having by means of your ground therm meter discovered the maximum or middle of the warm peri of your land, the farther it is from the maximum or middle the warm period in the air the greater the certainty that yo land is in good condition of heat, and that the cold peri will be delayed, so as to counteract the effects of a cold, toward spring, which is more or less likely to occur, as it ap- pears, in the intermediate years between the septennial perio explained in our previous article.

The effect of judicious drainage in thus getting the lan into good heart—that is to say, in point of fact, increasing it capacity for absorbing heat—has been generally admitted; bu we are tardy as yet in seeing the immense advantage, in th same line, that is likely to result from deeper subsoil culti vation. If anything will tend effectually to counteract th stress of untoward seasons, it is, we believe, deeper cultivatio of which nature gives us a hint in the length to which th tiniest roots will delve below the surface, seeking better co ditions of life and growth.

IV. PERIODICITY OF RAINFALL.

Several cycles or periods of maximum and minimum rainf have been devised by ingenious investigators; but, after a elaborate examination of the subject, Mr. Symons has b unable to attest the accuracy or sufficiency of any of th He has, however, discovered the important fact that the wett years have run in *twelve*-year periods—1860, 1848, and 18 had a mean of 34.27 inches, which is *higher* than any oth individual year except 1852.

The *dry* years, on the other hand, seem to run in *ten*-yea periods—1864, 1854, 1844, and 1834 had a mean of 23. inches, which is *lower* than any other individual year, exc 1858.

But then there have been two consecutive "wettest" ye (1848 and 1849), and even three "wettest" years (1828, 18 1830); also two and three "driest" consecutive years (18 and 1855—1854, 1855, 1856).

At the present time, when so much interest is felt on hands respecting our excessive drainage, diminished wa supply, and the condition of our rivers, the following resu deduced by Mr. Symons from an examination of the rainf of fifty years (from 1815 to 1864), in ten widely separ stations, may at least be interesting if they do not lead to definite inferences as to the periodicity of maximum rainf The stations are in the following counties—Devon, Ke Middlesex, Surrey, Essex, Lincoln, Lancashire, York, Ed burgh, and Argyle.

In the first ten years (1815 to 1824) *seven* were above average of fifty years; in the next ten (1825 to 1834) *six*; the next (1835 to 1844) *five*; in the next (1845 to 185 *four*; in the last (1855 to 1864) *three*. In the first twenty-five years *sixteen* were *above* the average, and in the next sixteen were *below* it.

This fact seems to infer something like periodicity, involving apparently that compensation or tendency to equilibrium which characterises all nature; but there may be another cause for it, which will be mentioned in the sequel.

From the means of these fifty years, classed in periods of five years, Mr. Symons reasons as follows: "From these tables we find that, when, as in this case, local irregularities are neutralized by the combination of observations from a large tract of country, rainfall records evince a regularity not before expected, the main and marked feature being the drought in the years 1854 to 1858. *Omit* these five years, and then the records run in *five*-year means, without a single departure of an inch from the average. But it will not do thus to *omit* them; they were exceptional, but are part and parcel of the whole, and must by no means be separated; the whole must be carefully examined. For several reasons it seems better to take the ten-year means; and from them we find that the annual fall in each ten years from 1815 to 1854 was *nearly equal*, and always greater than in the last ten years (1855 to 1864); and, moreover, that the ten years 1845 to 1854 had a rainfall (28.61) nearly identical with the mean (28.60) of the preceding thirty years (1815 to 1844). Hence, it is evident that at any stations where observations have been made continuously from 1845 to 1864, we may take the ten years 1845 to 1854 as representing the forty years 1815 to 1854, and the difference between the first and last ten years as representing approximately the decrease of rainfall at that place."

According to Mr. Symons, the leading features at present seem to be (1.) a decrease averaging four per cent. over the whole British Isles, but unequally distributed, the decrease being exchanged for an increase in parts of Ireland and the south of Scotland. (2.) In England, although the amount of decrease varies up to 18 per cent., it never falls below an excess (if the expression may be allowed) of 2 per cent. (3.) Although at first the figures seemed very discordant, yet, on drawing the lines on a map, some order seems to become evident—namely, that the maximum deficiency has existed along a line running S.W. to N.E. from Cornwall to the Wash. Proceeding north-westward, the deficiency becomes less, until the parallel line running through the centre of Ireland, and passing into the North Sea at Edinburgh, marks a district in which no deficiency has existed, but, on the contrary, an excess of nearly 10 per cent. This is, we believe, a striking fact, and we shall revert to it in the sequel.

The next districts follow nearer to each other, and seem to involve the eventual adoption of west to east, instead of south-west to north-east as at first apparent. Possibly this is not the case; but the difference is rather due to errors of observation at the lighthouses, whence most of the values herein assigned for Scotland are derived; or it may arise from the modifying influence of Ireland not being felt in those higher latitudes. "But," said Mr. Symons, addressing the British Association for the Advancement of Science, "I might farther point out that the deficiency seems in some degree connected with the large drainage operations in the middle and eastern counties of England; but until, either by my own efforts, or the assistance of the Association, the observations are rendered more complete, it is not safe to attempt to determine the causes of the recent fluctuations."

We incline to believe that the last suggestion is the probable cause of the deficiency; for certainly in no period has man's activity been so great as during the last ten years in altering the face of the country, by railway cuttings, by clearing out spaces, by agricultural and other drainage, by the operation of huge manufactories consuming prodigious quantities of water, and turning still more to waste. But, indeed, these causes have been in operation during the entire period of the last 25 years, wherein, as before shown, the rainfall has been below the average, excepting in those localities which have been exempt from these effects of advancing "civilization." And here we must again turn to the line of maximum, of excessive rainfall, so curiously discovered by Mr. Symons—a most important fact, as we take it, in meteorological investigation.

This line of maximum and increase of rainfall begins at Valentia, in Ireland, in the S.W., proceeding N.W. between Dublin and Belfast, crossing the lake districts of England, and through the Border Land to the German Ocean. Now, throughout this belt of copious rainfall all the conditions of vegetation, tall trees, and elevated points exist, and man has done little or nothing to interfere with Nature. We believe it will be found to be the same everywhere else; the more natural the locality the more will Nature favour it with the fruitful rain, which is the milk and honey of the land.

But if we cannot undo the past, is there no remedy for the future? Can nothing be tried, to restore our waters by increased rainfall in addition to checking waste? Let us consider the proposition. Rain clouds are attracted to certain localities more than others; and probably Nature's conductors are the points of the leaves of all vegetation, particularly trees; and hence, to the cutting down of trees may be traced their ultimate sterility—such as the present sterility of the once most fertile, but now deserted and desolate regions of Syria, Barbary, and Chaldea. The Euphrates often menaced ancient Babylon with inundation; but at present, thanks to the clearance of the woods from the mountains of Armenia, the river is modestly confined to its banks. The ancient river Scamander, which was navigable at the commencement of the Christian era, has completely disappeared with the cedars of Mount Ida, where it took its rise. If trees do not prevent the drought of countries, their roots open the soil for the percolation of water, and they oppose the scattering of the sands of the seashore upon the plains—another cause of infertility.

Such are the results of depriving a country of its trees, and the question is whether we cannot take a hint from Nature, so as to make amends for having interfered with her provisions. As suggested long ago by Sir Richard Phillips, should we not be able to prevent these disastrous droughts with which we have been of late so often visited, by erecting *metallic conductors* over the country, which might even be more effective than trees, besides vastly diminishing the chance of suffering from the thunderstorms? Placed on elevated surfaces, a sufficient number of such conductors would arrest the clouds, and produce sufficient rain to sustain vegetation, and refil the almost exhausted rivers in the most barren regions.

On the other hand, it may not be useless to suggest the propriety of reverting to our old custom of "cultivating" the oak. British oak will always be in demand, and it is now by no means superabundant. Then, not only on its own profitable account, but with the direct object of increasing our rainfall where deficient, let it be planted on the hill tops, and every locality unfit for other cultivation. Some trees have a natural aptitude, apparently owing to their moisture, to attract the thundercloud, and the oak is one of them. Many an owner of wide lands should take this hint, and become a benefactor to himself as well as the nation, which is the best way of making both ends meet here below.

Artesian wells would, of course, be another means to supply the deficiency of water, and indeed the only means of obtaining a supply sufficiently large to meet the requirements of effective irrigation, if this is to be done artificially. There is no comparison between the quantity of water that falls in an hour's steady rain, and that which could be applied by any artificial means at present in our power. A fall of rain measuring only one-tenth of an inch seems a small matter, and yet to equal it artificially would require about 10 tons per acre, or 2,262 gallons of water! But take another illustration: Half-an-inch of rain is a very moderate amount for a thunder-shower. Well, how many cans of water would be required to equal half-an-inch on a garden of 22 yards square (a tenth of an acre)? If your can holds 4 gallons, you will have to fill it no less than 282 times, and pour out no less than *five tons* of water! Every gardener knows that watering is useless in drought unless it be copious and drenching.

In its normal condition the rainfall of our island has been very varied in its amount in different localities, depending upon the peculiar features of the country as before stated. In the lake districts, for instance, the yearly fall is sometimes as much as 150 inches or over; in the extreme south of England it averages from 30 to 31 inches; in the neighbourhood of London, 25 inches; about 24 inches in the midland counties, and considerably less in some localities; 30 inches on the west coast, which, in the hilly districts of Cornwall and Devonshire, is sometimes increased to 40 inches, and about 26 inches along the east coast. As a general rule, the rainfall is greater on the west than on the east coast, and on mountains than on plains, precisely for the reason we have given, namely, the power of the innumerable points of trees and minerals to disturb the electricity of the clouds and make them fall in rain.

Were it not for the late disturbance in the averages throughout the country, we might at any time foresee approximately how much more rain will fall during the year by deducting the quantity fallen, as recorded by the rain-gauge, from the average of the locality. Thus, according to Mr. Symons, the rainfall at Camden Town during the six months ending with June, was 17.08 inches; then, as the average of the locality is 24½ inches, there remain only about 7½ inches to fall in the ensuing six months. But then, when we consider that in the disturbed state of the matter the last six months' rainfall was more than that of the whole 12 months of 1864, it is obvious that this otherwise reasonable rule cannot be trusted. It may, however, be well to remember that the rainfall generally has been in excess of the average of the last five years (1860-

1865) during the last six months. In England and Wales the fall has been about 2¼ inches above the average, say 15 per cent. in excess. In Scotland, the fall has been about 1 inch above the average, say 4 per cent. in excess. In Ireland, the fall seems to have been about 2 inches above the average, say 11 per cent. in excess. Speaking roundly, the rainfall of the past six months has been about one-tenth part greater than usual, but in *Middlesex*, *Kent*, and *Hampshire* it has been nearly half as much again as usual—42 per cent. in excess.

In like manner the number of rainy days, or days on which some rain falls, has been laid down for each month of the year; but there seems, at present, great reason to doubt the periodicity, whatever it may have been during the years from which the average was deduced. Certainly the average is very far from tallying with that of late years, in which, however, the seasons have seemed "out of joint."

According to the table before us, on an average of 46 years, it appears that some rain falls on 136 days out of the year, and that the average is divided over the several months in the following proportions:

January 11 days, February 10, March 10, April 11, May 11, June 11, July 12, August 11, September 12, October 13, November 12, December 12.

This table has been calculated more particularly for the immediate neighbourhood of London; but it was believed to be very near the truth, if not absolutely so, for a very large part of the country generally. The reader will doubtless be struck by the equal distribution of the *rainy days* over each month, as shown by the above table—the greatest difference being three days only between the number for February and March, and October. Grouping these numbers according to the four seasons, we have the following result: Spring has an average of 10.7 days in each month on which some rain falls; summer, 11.3; autumn, 12.3; and winter, 11.0. Autumn gives the greatest number of rainy days, as it also gives the largest amount of rain.

But all this seems to be rather a thing of the past. According to Mr. Symons's Rainfall Circular, the number of "rainy days," or days on which rain, snow, or hail is recorded to the extent of at least one-hundredth of an inch, is very irregular over the country, and generally much greater than the above, at all events for last year. Still, however, it may be useful in each locality to consider the number of rainy days noted in a *five-year* period, and so discover if there be anything like regularity in the recurrence, and thereby know the number of rainy days that are to follow at any time or season. Of course, the average rainfall of a locality is a serious consideration in taking a farm, and the continuous record of the rain-gauge must enter into the prospect of coming harvests. The possession and *proper* use of rain-gauge must, therefore, be considered indispensable to farmers.

Having considered the various signs that may enable us to form a reasonable opinion as to coming seasons, we now proceed to the study of those which may enable us to foresee coming changes from day to day and hour to hour. The lower animals get an idea of coming weather from their sensations; but for the most part man relies upon the instruments which his intellect has devised, and which are, so to speak, substitutes for the instinct of the former. No single weather-instrument is absolutely sufficient in itself, even for ordinary indications, unless it be the hygrometer; but even with this instrument we are obliged to interpret signs by the help of laws established by means of the barometer.

The barometer tells us the *pressure* or *weight* of the air at any given time. Now, what does this mean, and what has it to do with coming weather? The chief difficulty of this question is explained by what happens in a common pump. Water can be raised, or made to rise, in a common pump from 32 to about 35 feet in height, being kept there by the pressure or weight of the air on the water in the well. Thus the weight of a column of air of equal diameter is balanced by the column of water in the pump—which is thus a barometer, however imperfect; and if there were no spout to it, and the upper part were of glass and graduated with feet and inches, we should see that whenever the pump is kept in action by moving the handle, the water would rise to different heights in different weather, precisely like the mercurial barometer, remaining at a certain height, according to the weather, and unable to get higher, in spite of continued pumping. The imperfection of the pump as a barometer consists in the fact that the air above the column of water cannot be prevented from exerting some pressure, the space not being a perfect *vacuum*, or exhausted of all air.

Now it was known that mercury or quicksilver is fourteen times heavier than water, and therefore it was supposed that 1-14th part of 35 feet of mercury would in like manner be an equipoise or balance to the column. Accordingly a certain philosopher took a tube of glass, closed at one end, filled it with mercury, and then turning the open end into a small cistern or cup containing mercury, he found that part of the fluid, when held perpendicular, flowed out, but that the other part remained standing at a certain height, just like the water in a pump; this height being noted on the glass tube, and various alterations in the height appearing from time to time, at length, after a long series of observations, it was found that the pressure of the atmosphere, when least in very foul and stormy weather, is much about equal to the weight of twenty-eight inches of mercury, and in fine and serene weather that it will support about thirty-one inches of the fluid; between which extremes all the changes that happen in the weight of the air near the surface of the earth are generally found to exist. Such is the nature of the barometer, and such were the experiments that led to its invention. It will now be evident what is meant by the pressure or weight of the air and its connection with the weather and its changes. When the air is dry and free from vapour, or calm, it is *heavier* than usual, and presses more upon the mercury in the well or cistern of the barometer (concealed by the wood-work), and forces up the mercury; then the mercury is said to stand *high*. When the air is moist or filled with vapour or windy, it is lighter than usual, and the pressure consequently diminishing on the mercury in the cistern, the column in the tube falls, and is said to be *low*. Now all these changes are observed in different kinds of weather; and as the barometer shows them, for the most part, *before* the changes actually come on, we see how it may be used as a weather-instrument.

In a *thermometer* the mercury is sealed up from the air entirely, instead of being open to it at the bottom in a cistern, as in the barometer, and the mercury rises or falls as the varying temperature or degree of heat expands or contracts it. The heat of the air passes through the glass tube to the mercury and causes it to expand, whilst by the effect of cold it contracts; and so the thread of mercury rises or falls with heat or cold respectively.

With respect to the kind of barometers in which farmers should confide, it cannot be too forcibly inculcated that the ordinary wheel barometer is objectionable. It easily gets out of order, and rarely gives accurate indications of the *rate* of rise and fall, which are essential as warnings against bad weather. Either the aneroid or the pediment mercurial barometer should be used by farmers, in order to prevent surprises by bad weather.

If the mercury fall ever so little between eight in the morning and noon, it indicates decreasing pressure and consequently bad weather far more surely than even a greater fall would do if occurring between noon and four o'clock in the afternoon. Hence the importance of consulting the barometer at those early hours for the day's probable weather; because, according to experience, the barometer naturally rises between 8 a.m. and noon, and naturally falls (both in a slight degree) between noon and 4 p.m. So if it falls when it should naturally rise, there must be some great cause for it.

But there is another cause which will make the barometer fall, without, however, the least chance of being followed by bad weather. This is owing to air getting into the vacant space above the column of mercury. All may go on tolerably well whilst the temperature of the room remains moderate; but in the evening, when a brisk fire perhaps has been blazing, the air above the column expands and drives down the mercury. If the farmer then consults his barometer before giving his orders for the next day, it is evident that he will be far out in his reckoning.

We believe that many barometers are in this condition, and they should be occasionally tested for it, by canting them at an angle sufficient to drive the mercury up to the top of the tube. If, then, you do not hear the metallic clink of the mercury, there is air in the space, and you should go on canting the instrument in like manner until you hear the clink, after thus driving out the air.

the higher we ascend from the sea-level the less the re of air above us, it is evident that the column of mer- y will get shorter and shorter the higher it is fixed above sea-level. It differs or stands lower about *one-tenth* of an for each hundred feet of height directly upwards above sea, its average height being 29.95 inches at the mean level in England. Allowances must therefore be made for meters on high land or in buildings—each elevation hav- its own line of pressure or "mean."

dications of approaching change of weather, and the tion and force of winds, are shown less by the *height* of barometer than by its falling or rising. A *rapid* and derable fall is a sign of stormy weather, with rain or . The wind will be from the northward if the thermometer is low *for the season*; from the southward if the mometer be high.

average temperature of the seasons for the locality therefore be known and remembered in consulting the eter—on such occasions especially; indeed, it is never draw conclusions from the barometer alone, without ing the temperature and the state of the air as to as shown by the hygrometer. Many errors in prog- ing result from the neglect of this precaution.

average temperature of the seasons for every locality easily ascertained upon inquiry. The following is the at the three following places:—

	Spring.	Summer.	Autumn.	Winter.
wich	48.4	60.3	49.4	37.8
nd	46.2	57.6	49.1	40.5
gh	45.0	57.1	47.9	38.4

f maxims relating to the weather in connection barometer, with which the farmer is specially con- n as follows:—

the barometer has been about its ordinary height— inches at the sea-level—and is steady or rising, whilst mometer falls and dampness becomes less, then north- y, northerly, or north-easterly wind, or less wind, less snow may be expected.

a fall take place with a rising thermometer and in- dampness, wind and rain may be expected from the stward, southward, south-westward.

In winter, a fall with a low barometer foretells snow.

A fall of the barometer, with unusually high temperature season, will be followed by a southerly wind, with and during the gale the barometer may begin to rise, followed by another from the northward; but then the meter will fall for *change of temperature*, and show the of the coming wind.

But northerly winds will follow a fall of the barometer times if the thermometer be low (for the season), and ly wind, if the thermometer be high for the season.

The barometer is *lowest of all* during a thaw following *frost*, because the air, which had been much dried by , absorbs the moisture of the fresh warm current of from the south or south-west; and, secondly, the air, been much condensed by frost, is suddenly expanded warm wind which is introduced.

In like manner the glass falls very low with south and winds in general, because these winds are generally laden vapour, and vaporized air is lighter than dry. The the air the less the pressure. Such falls with a south- wind in the autumn are very often attended by thunder-

If the barometer falls with the wind in the north, we prepare for weather of the worst description—rain and in summer, snow and severe frosts in winter and early

A rapid rise in winter, after bad weather, is usually fol- by clear skies and hard white frosts. The pressure of air is increased by cold.

During frosty weather, if the barometer falls it denotes a ; but if the wind goes again to the north, the mercury rise, and the frost set in again.

11. During broken and cold weather in the winter, with erly winds, a sudden *rise* of the barometer foreshows a ge of the wind to the southward, with rain.

12. If, during a northerly and easterly wind in winter, the meter rises slowly, expect snow or cloudy weather.

13. In a continuous frost, if the mercury rise, it will cer- ly snow.

14. Whilst the barometer stands above 30, the air must be very *dry* or very *cold*, or perhaps both, and no rain may be expected. For, if it be very *dry* it will *absorb* moisture, and not part with it in rain. If the air be very cold, it is so much condensed that it has already parted with as much moisture as it can spare.

15. Of course a great rise in summer means dry and warm weather, and if this be of long duration the question is, how will it end? If a sudden fall, say, of two or three tenths occur, we must prepare for a storm of rain, or thunder and rain. This usually follows a period of unusual heat, unless northerly and easterly winds are to succeed, with drought.

16. Thunderstorms are not always foretold by the barometer; indeed, the barometer cannot indicate electricity, as some of the barometer-maxims seem to infer. We must consult the clouds and our feelings for thunder. The barometer falls, but not always, on the approach of thunder and lightning. It is in very hot weather that the fall of the mercury indicates thunder. Thunder clouds rising from north-eastward *against the wind*, do not usually cause a fall in the barometer, simply because they are borne onward by a *polar current*, which is dense. An approaching thunderstorm is indicated by a rapid decrease of the daily *evaporation* during hot weather.

17. A rising barometer—with a southerly wind—is generally followed by fine weather; but then it will be generally observed that a change of wind occurs at the same time, or very shortly after.

18. During stormy weather the mercury will be seen to rise and fall continually, and to be in a state of general agitation. Whilst this lasts no hope of good weather can be entertained.

19. Although some rain may occasionally fall with a high barometer, it is usually of trifling amount, and of short duration.

20. When the barometer *stands* very low indeed, there will never be much rain; although, on the other hand, a fine day will seldom occur at such times. The air must be very warm or very moist or both, and so there will only be short heavy showers, with sudden squalls of wind from the west. For, if the air be very warm it will have a tendency to imbibe *more* moisture, and not to part with what it has. If the air be ever so *moist*, rain will never fall till cold air has been introduced to condense the vapour, and the moment the *cold* air is introduced the barometer will rise, because it will condense the air.

21. A sudden fall of the barometer, with a westerly wind, is sometimes followed by a violent storm from N.W. or N.N.E.

22. In summer, after a long-continuance of fair weather, the barometer will fall gradually for two or three days before rain comes; but if the fall be very sudden, then a thunderstorm is at hand.

23. When the barometer is *high*, dark, dense clouds will pass over the sky, without rain; but if the glass be *low*, it will often rain without any appearance of clouds.

24. If wet weather happens soon after the fall of the barometer, there will be little of it. In fair weather, if the glass falls much, and remains low, expect much wet in a few days, and probably wind. In wet weather, if the glass continues to fall, expect much wet.

25. The barometer sinks lowest of all for wind and rain together; next for wind, except it be an east or north-east wind.

26. Instances of fine weather with a low glass occur, however, rarely; but they are always forerunners to a *duration* of wind or rain, if not both.

27. Our storms are generally announced by a fall of the barometer, and a tendency of the wind towards east and south; the return of fine weather, by a rise and a pretty strong west wind, apparent in the motion of the *clouds* before it is felt below.

28. A great and sudden change, either from hot to cold or from cold to hot, is generally followed by rain within twenty-four hours; because, in the change from hot to cold, the cold condenses the air and its vapour, which being condensed falls in rain; and in the change from cold to hot, the air is quickly saturated with moisture, and as soon as night comes on, the temperature is lowered again, and some of the abundant moisture falls in rain.

29. When heat rapidly follows cold, the evaporation, which was checked by cold, is carried on very rapidly, in consequence of the diminished pressure of the air by heat. The less the pressure of the air, the more rapid the evaporation of moisture.

30. The barometer varies most in winter, because the *dif-*

ference of temperature between the torrid and temperate zones is much greater, and produces a greater disturbance in the state of the air. It varies least in summer, because the temperature of our island is so nearly equal to that of the torrid zone, or hot regions of the earth, that its state is not much disturbed by interchange of currents.

31. Heat and cold do not of themselves affect the barometer, but because cold weather is generally either dry or rough, with north-east winds, the air being denser and heavier —therefore the mercury *rises* in cold weather; but in warm weather the air is often moist and less dense, with south-west winds, and therefore lighter, and so its pressure is less, thus causing the mercury to fall.

32. If the top of the column of mercury be convex, or higher in the middle than at the sides, it is rising; if lower, or concave, it is falling. This is caused by the attraction of the glass-tube in contact with the mercury.

Such are the chief rules and maxims of the barometer with reference to agricultural pursuits, the seasons, and the crops. No attention should be paid to the words engraved on certain barometers, such as "set fair," "rain," &c. These expressions have done much injury, since many persons have been misled by them; and they should be discontinued by general consent of the instrument-makers, together with the total abolition of the banjo or wheel-barometer.

Moreover, the words "Fair," "Changeable," &c., should be removed and placed more fitly, and with some reference to the elevation above the sea at which the barometer is used. It is clear that *at the sea level*, the height of 29.80 will more truly represent the *medium* or limit of fair and wet weather, than 29.50, at present marked "changeable." In employing the instrument as a weather-glass it is needful to the success of the observer to attend to it daily, and to watch the approach of the quicksilver to the *true limit of the fair and wet indications*, and its reading from this in ascent or descent; with attention to past as well as present circumstances. Fair weather and sunshine may often be found to accompany a low state of the barometer; but they are not in that case to be depended on. Continued movements in either direction may be safely taken as indicative of a corresponding duration in the weather they imply—as in the weather following the recent change at the close of July. When the mercury in its downward course has passed the true changeable point above given, *rain*, if it have not fallen, is to be expected *in its rising again above it;* after which, the fair weather indicated by that rise is found to prevail.

The most difficult weather of all for the farmer, when his labour requires a certain degree and continuance of dryness, is that in which the quicksilver makes frequent short movements, in ascent and descent, still keeping about the point which answers to the limit above mentioned; and *which point it is therefore necessary to settle accurately for him,* according to the elevation at which he is placed above the sea.

One word respecting the "storm glasses" may be required. They consist merely of a solution of camphor, saltpetre, and sal-ammoniac, in diluted spirits of wine. These toys are useless in prognosticating the weather, being only affected by light and temperature. Perhaps they show the state of the air as to *moisture*; and if so, this is the utmost extent of their utility. We need not state that they cannot indicate the pressure of the air, which is essential in all states and changes of the weather.

THE HYGROMETER.

It is impossible to over-rate the hygrometer as a means of foretelling coming weather. Indeed, the knowledge of a few facts will suffice to show that the hygrometer is indispensable if we wish to form an accurate opinion on this subject. One of these facts is, that the air is rendered lighter not only by its expansion, but also by the amount of invisible *watery vapour* in it; and this is accurately shown by the hygrometer, thus enabling us to distinguish whether a fall in the barometer indicates wind or rain, or both together.

In connection with the barometer and thermometer, this instrument affords infallible notice of impending weather—provided we know how to interpret and reason out its indications, which is by no means difficult.

Several kinds of hygrometers have been invented, but the instrument now in use is the dry-and-wet-bulb thermometer, originally designed and introduced by Dr. Mason, and subsequently modified in a slight degree by Mr. Glaisher.

The hygrometer consists merely of two thermometers fix side by side, one of which has its bulb kept moist with wate by means of muslin or cotton-wick, one end of which dips a cup with which it is furnished.

As the instrument must be used out of doors, it is obvio that the hygrometer attached to what is called "the farme barometer" is a very useless affair as an indicator of weath It can only serve to show the amount of moisture in the of the room where the barometer is hung, and that impe fectly. In testing the moisture of the air for the prognostic tion of the weather the hygrometer must be suspended in convenient position out of doors, free from draught, on proper stand, sheltered from rain, about 4 feet from the groun not very near buildings, nor exposed to sunshine. Of cour the instrument may be kept in-doors and only carried out f observation after 5 or 10 minutes' exposure.

In summer time apartments are cooled by sprinkling wat on the floor, and the same happens to our streets after th watering-cart has passed. The reason is that the water eva porates and in so doing parts with heat, the consequence being the production of cold. This is the way the wet bulb thermometer acts. As the water in the cotton round the bulb evaporates it parts with its heat, and the consequent cold i shown by the height of the mercury in the tube. If the ai be absolutely saturated with moisture, which is sometimes th case, the two thermometers will read off alike; if it be ver dry, then the difference between the two will be considerable.

The difference between the two thermometers doubled an taken from the lower, will approximately show the dew poin that is, the temperature to which air must be reduced at an time before the moisture in it, in the invisible form of vapou can be deposited as dew. But this rough method only answe at a few temperatures; in the great majority of cases it wi make it either too high or too low. Of course the nearer th approach to saturation with moisture, the greater the tendency in the air to part with it in dew or rain by the lowering o the existing temperature.

A set of tables has been drawn up by Mr. Glaisher, which give by inspection the dew point and percentage of moistur in the air for all temperatures of the dry and wet bulb. Complete saturation is taken at 100, and thus the other states ar expressed by decreasing the numbers according to their proportion of moisture.

There is also another method of ascertaining the dew point namely, by calculation with a set of "factors" furnished fo the purpose; but for the practical man it will be quite sufficient to notice the approach to saturation with moisture in th air as indicated by the small difference between the temperatures of the dry and wet bulbs—from equality down to abou 5 degrees in summer with southerly and westerly winds, bu less in winter, and with north-easterly winds in summer. Whe the difference is beyond 4 or 5 degrees there is very little probability of rain, in spite of the appearance of the sky—a lately, during the long spell of north-easterly winds—whe it often deceived even weather-wise people into the expectation of rain.

With respect to the degree of moisture in the air, an approximate idea may be formed from the following table of proportions of humidity for every degree of difference between th two bulbs, at 50 degrees temperature—taking equality in th two thermometers as indicating complete saturation, or 100.

Difference at 50 degrees.	Humidity.
1 degree	93
2 "	86
3 "	80
4 "	74
5 "	68
6 "	63

It will be as easy to apply these figures in estimating the probability of rain. For instance, the humidity in the air on Monday, June 18th, as well as the day preceding, closely approximated saturation (96)—the bulbs being pretty nearly equal in temperature; we had rain, and it fell heavily in the north-western counties, the wind being chiefly south-west. On Friday, the 22nd, the humidity diminished to 69, which would infer a difference of rather over 5 degrees between the two thermometers, and fine weather set in, the wind veering to the *eastward*.

No doubt it will be useful to have a few rules for guidance in prognosticating coming weather by the hygrometer, which is better for the purpose than the barometer, as before stated; due regard being had to the time of day and the time of year when we make the observations.

1. In summer, when the daily range of temperature is great, if in the morning the difference between the air temperature and the dew-point temperature be small, and the rise of temperature during the day be considerable, it is probable that the difference will increase; and if the temperature of the dew-point at the same time *decrease*, it is an indication of very fine weather.

2. If, on the contrary, the temperature of both should increase with the day in nearly equal proportion, rain will almost certainly follow, as the temperature of the air falls with the declining sun.

3. In winter, when the daily range of temperature is small, the indication of the weather is shown by the increase or decrease in the temperature of the dew-point, rather than the difference between the temperatures of the air and of the dew-point. If the temperature of the dew-point increases, rain may be expected; if it decreases, fine weather.

4. In showery weather the indications vary rapidly, and if we examine the hygrometer at short intervals we may predict the approach of a storm, especially if we make at the same time observations with the barometer. But the hygrometer, properly interpreted, will be accurate when the barometer may misguide us. Thus, on the 3rd June, 1866, the wind blew strong from S.W. at Corunna and in England, notwithstanding a *rise in the barometer*, which was followed by clouds and copious rainfall, as indicated by the hygrometer; the difference between the bulbs being about 5 degrees.

5. Again: From the 24th to the 29th of June, the wind blew from N.E., with very little (if any) effect on the mean temperature—the thermometer increasing from 64 degrees on the 24th to 75 degrees on the 28th, at Frant, Sussex, as stated by Mr. Alnatt. Now, during the whole interval the hygrometer indicated from 70 to 80, alternately, of moisture, but without rain. On the 29th, however, the temperature fell to 63 from 75, the hygrometer indicated 80 of moisture, and half an inch of rain fell accordingly, the wind having backed to N., and the barometer having *risen*—namely, from 29.60 to 29.65. This instance also shows that the high amount of humidity (80) was not in itself sufficient to cause rain whilst the temperature remained high. So we must watch for the fall of temperature in prognosticating rain.

6. A high and rising thermometer forbids the prospect of rain, in spite of the large amount of moisture in the air; but the slightest decrease of temperature settles the matter forthwith, even with less moisture and a westerly wind.

7. During the continued sultry weather, such as we had before the late north-easterly winds, the appearance of big clouds is apt to make us rush to the conclusion that rain is coming. It is not the fault of the clouds if they deceive us, but our present inability to interpret them accurately. Thus, on the 14th of July, between 7 and 8 o'clock, the sky became overcast, and big clouds appeared above, so that a thunderstorm seemed at hand. Even the electrometer indicated negative electricity, which is considered a certain sign of rain. The only contrary sign was that there was *red* in the sky, showing that the vapour of the air was not actually condensed into clouds, but only on the point of being condensed, and therefore that the weather would still be fair, according to the Scripture maxim, "When it is evening, ye say it will be fair, for the sky is red." And the hygrometer still said there would be no rain as yet, as, indeed, there was not, for it showed 6 degrees of difference between the bulbs, besides high temperature.

8. The hygrometer will tell us whether wind alone may be expected from the fall of the barometer. If the barometer falls suddenly two or three-tenths, without any material alteration in the temperature, and the hygrometer *does not show much moisture*, a violent gale of wind may be expected.

9. When the hygrometer shows much moisture, with only a trifling fall in the barometer, it merely indicates a passing shower and little wind.

10. When the barometer falls considerably, and the hygrometer shows much moisture, the thermometer remaining stationary or rather inclining to rise, then both violent wind and rain are likely to follow in the course of a few hours, from the southward and westward.

11. If the barometer falls during north-easterly winds, and the difference between the dry and wet bulbs increase or be great (over 5 degrees), expect strong or more wind from the north, before which the barometer will rise, with sky densely overcast and cloudy.

12. A rapid increase in the difference between the bulbs in the morning will indicate a fine day, in spite of all appearances to the contrary.

13. On the other hand, extreme dryness or great difference between the bulbs with a S.E. wind should be suspected. Great rains may follow in a day or two.

14. If in the morning after a fair day the difference remains stationary or increases, expect rain. This is perhaps the most certain indication of rain.

15. An increase in the difference between the bulbs during rain or snow is favourable at whatever time it occurs.

16. After continuous north-easterly winds, the increase of moisture, as shown by the hygrometer, will clearly show the coming change to the southward and westward, with wet; but then the barometer will have fallen considerably, and the temperature diminished.

17. A slight increase of moisture during north-easterly winds must not be taken as a sign of rain, especially after a warm day, without the indication of the barometer and thermometer.

18. If the difference increases in the evening, after rain, with a south-westerly wind, finer weather may be expected, although the difference be not considerable. The wind will probably back to a drier point—S.S.E. and E.—but, of course, unsettled weather, as recently occurred, July 28th, from the backing of the wind.

19. But the most reliable signs are afforded by a progress from day to day towards the moist extreme of the season by the approach towards equality in the bulbs. A retrograde movement towards dryness often takes place during wet or showery weather which the preceding advance towards the moist extreme had prepared us to expect.

Such are the chief rules that may guide the farmer in consulting this invaluable instrument, which, as far as coming rain is concerned, is more reliable than the barometer, because it deals with its immediate cause at every instant—namely, the amount of moisture in the air and the change of temperature.

There are, however, a few variances in the indications of the hygrometer during unsettled weather, connected with *evaporation*, of which more in the sequel.

The instrument should be in universal use, in our changeable climate, not only during haymaking-time and the all-important time of harvest, but also to do away with the many doubts about the weather from the mere *appearances of the skies*, causing the great inconvenience of carrying umbrellas when not at all likely to be required, and their consequent wear-and-tear by carrying; all which might be avoided by investing twelve or fourteen shillings in one of Casella's really good and cheap hygrometers, which we have been using.

If Admiral Fitzroy and his successors at the Meteorologic Office had attended to the hygrometer, they would have been much more correct in their "probabilities" about the weather. Instead of the almost-useless items in the daily "Weather Table" about the skies, they should get the figures of the hygrometer from all the stations; and then there would be little or no difficulty in prognosticating what sort of weather is "probable" at any of them. This is what is wanted; and if people will then attend to the few rules we have given, there will seldom be any mistakes about coming weather, on any of our coasts or anywhere else throughout the country.

RAISING POTATOES UNDER STRAW.—On a recent trip in St. Clair County, Illinois, we saw hundreds of acres of land covered with straw. The ground had been ploughed and harrowed and marked off, and potatoes dropped, and then the whole surface covered about six inches deep with straw. The potatoes have no further attention till digging-time, when two or three hundred bushels per acre are obtained. The straw keeps the weeds down, and the soil cool and moist. The straw is raked away in autumn, and there lie the potatoes white and clean. The straw potatoes bring the highest price in market —*Rural World.*

THE FOREIGN CATTLE TRADE.

The foreign cattle trade is beginning to attain gigantic proportions, and is more especially a considerable one for the port of London, where the demand for meat for the millions of its urban and suburban population is enormous. Not only are the imports rapidly increasing, but they are likely to continue to do so from the high price of meat. In ten years the live stock imported for food has increased six-fold, from 238,281 head of all kinds in 1856 to 1,330,384 head in 1865. In 1850, according to Ormandy's report, the stock imported from Holland, &c., by sea, for the supply of Smithfield Market, was 44,818 beasts and calves, 125,269 sheep, and 2,000 pigs.

The following figures from the Board of Trade returns give the annual numbers imported into the kingdom in the last ten years:—

	Beasts and Calves.	Sheep and Lambs.	Pigs.
1856 —	83,306	145,059	9,916
1857 —	92,963	177,207	10,678
1858 —	89,001	184,482	11,565
1859 —	85,677	250,580	11,084
1860 —	104,569	320,219	24,452
1861 —	107,096	312,923	30,308
1862 —	97,887	299,472	18,162
1863 —	150,898	430,788	27,137
1864 —	231,734	496,243	85,362
1865 —	283,271	914,170	132,943
1866 to June.	81,934	411,729	29,873

The increased imports last year over the previous year are very large, especially in sheep and pigs; the returns, however, for the first six months of this year shows a considerable decline. The estimated value of the foreign stock imported last year, at the current rates, would be fully six millions.

Although there are thirty-nine ports at which cattle are imported, two-thirds of the whole are brought into the river Thames. The imports into London were from the following countries:—

	Beasts and Calves.	Sheep.	Pigs.
Germany	8,184	123,750	21,143
Holland	79,608	280,888	31,676
Belgium	4,365	27,971	741
Portugal	1,152	—	—
Spain	3,187	13	—
Denmark	40,555	53,281	75
France	3,626	17,582	22,735
Sweden	1,291	2,074	1,033
Norway	124	—	—
	143,103	505,559	77,403
Landed at Thames Haven	16,551	18,955	872
Total	159,654	524,514	78,275

Holland, it will be seen, is the great exporting country; but the cattle are not wholly produced in the States from which they are shipped: animals are brought down the Rhine in boats, and from the interior of Germany by rail-road; whole flocks and herds are driven over the roads to the places of embarkation. Last year there were shipped from the port of Rotterdam 69,970 head of cattle, 40,780 calves, 242,410 sheep, and 33,840 pigs. The cattle plague, unfortunately, made great ravages in Holland, in spite of energetic measures by the government: military and maritime cordons were established round the infected province (South of Holland), and weekly returns were published by the government in the official gazette; stringent regulations were adopted in conjunction with the local authorities, some of whom, however, proved somewhat troublesome and refractory; but, in spite of every precaution, the disease increased, and when the cattle were removed from the pastures to the stalls the weekly returns showed a fearful development of the disease, rising on the 30th December last to a total of 21,000 head attacked; whilst the first week in December had only established a total of 11,000 head attacked. The military and maritime cordons did not confine the disease to the province of South Holland, as it has since spread to the provinces of North Holland and Utrecht, without, however, showing itself in such an aggravated form. An exception was made to the stringency of the cordon regulations in favour of the through-traffic of cattle from Germany along the Rhenish railway, which passes through the heart of infected and non-infected districts. Considering that the export of cattle to England from the Dutch ports amounts to about 140,000 head per annum, this concession in favour of so large a traffic was almost necessary, but it is placed under the strictest surveillance.

Out of the total number of animals brought into the port of London from abroad, and inspected by the veterinary surgeons or other officers of the Customs during 1865, there were 196 beasts, 74 calves, 388 sheep, and 421 pigs condemned and destroyed at the landing-places up the river, and 44 beasts, 87 sheep, and 4 pigs at Thames Haven. In consequence of disease, or injury of some kind, 240 beasts, 74 calves, 425 sheep, and 425 pigs were condemned after entering the river Thames. There were slaughtered, and passed as fit meat for human food, 1,451 beasts, 57 calves, 755 sheep, and 2,519 pigs. The per-centage of animals affected with disease was smaller in 1865 than in former years, being—of pigs 3 per cent., of beasts 1.3 per cent., of calves 0.42 per cent., and of sheep 0.22 per cent. As to the rinderpest, the Commissioners of Her Majesty's Customs, in their annual report to the Lords of the Treasury, state "that the inspectors have been unremitting in their attention, and careful in the discharge of their duty; and though, in the case of a disease where the period of incubation has been found to be so unusually long and uncertain, it is impossible to say that animals containing the germs of such a disease, though showing no sign of it on their arrival, may not have been admitted into the country, we can state distinctly that from the commencement of the outbreak up to the end of the year only one case of rinderpest was discovered on importation into London. That was the case of a cow which arrived at Blackwall in the month of September, more than two months after the first outbreak of the disease in London, having been smuggled surreptitiously on board the steamer 'Maas' at Rotterdam, without the knowledge of the agents or the master of the vessel." The whole of this cargo was slaughtered on the wharf, but the oxen that came over with this infected cow showed no signs of disease. The two cows, however, which had been confined with the one that had the rinderpest, having been kept in quarantine thirteen and twenty-one days respectively, gave indications of the disease, and were, consequently, destroyed. This is the only case of rinderpest detected at any of the cattle-wharves in the port of London, though there were two cows in a cargo landed at Thames Haven in 1865. The animals on the Continent suffer from the same kind of ordinary diseases that are to be seen in British produce, but the inspectors never allow cattle, sheep, or pigs to pass that have any complaints likely to render them unfit for human food. The ports following next in rotation, and in accordance with the number of animals imported, are Hull, Harwich, Southampton, Leith, Falmouth, Plymouth, Newcastle, Liverpool, and Hartlepool.

At a recent meeting of the Privy Council it was resolved not to revoke the Order compelling cattle to be slaughtered within four days after landing, so that our importations are now confined to the requirements of the meat trade; but the shipments, though not nearly so extensive as they might and would be were all restrictions removed, and farmers could purchase for stock, are still very large. These imports employ a considerable tonnage, and during the past two years several steamers have been built expressly for the service.

The Select Committee, of the House of Commons, appointed in March to inquire into the manner in which the home and foreign trade in animals by sea and railroad is conducted, consider that the importation of foreign cattle ought to be encouraged, as the importation tends to keep down the price of meat; and in their report the Committee recommend, for the public interest, slaughter-houses, where cattle could be killed and sent to the dead-meat market without driving them through London and other large towns. As regards placing cattle in quarantine, the Committee are doubtful whether such a system could be enforced, for the accommodation to be provided would be too extensive for such a trade, and disease might be propagated during the detention. "The only disease," says the report, "for which quarantine appears to be at all reasonable is the rinderpest. Where countries, like Spain or Denmark, are not only free from rinderpest, but are not a channel for the exportation of cattle from infected inland countries, there seems to be no reason for a quarantine for cattle exported from them."

FOREIGN AGRICULTURE.

reports of Her Majesty's Consuls in foreign countries, are now issued very promptly by the Foreign Office, with much useful information on foreign crops and The sixth of the series for the present year has just presented to Parliament, and relates to Austria, Prussia, Holland, &c. The Consul reports that from

ANTWERP

Wool entered in transit amounted in 1865 to about 20,000 against 42,918 in 1864. The prices, which ruled high beginning of the year, gradually receded until after the sales, rising again during the November sales, and the closed with prices well sustained and a good demand. stocks in hand were estimated at about 5,000 bales, 3,333 at the close of the previous year.

Grain.—The year 1865 exhibited a falling off in the amount of wheat and barley imported as compared with 1864, result to be attributed to the large stocks on hand at the commencement of the year, combined with the low range of which continued to prevail until its close. The Belcrop of 1865 having, however, proved deficient in, a demand for foreign grain arose towards the latter the year, the general transactions in respect of those remaining notwithstanding dull and inferior to those preceding years. There was, however, a considerable defor rye, a large quantity of which was delivered from by railway, not only for domestic consumption, but for exportation towards the Netherlands, owing to the range of prices for rye of Belgian and French growth as with those which prevailed for rye grown in Russia the Baltic.

Cattle Trade.—There has been a large and increasing trade in cattle from this port, which was, however, considerably checked during the past year by the restrictions established by the Government consequent upon the breaking the cattle plague in Holland and France. Horned having ceased to be admitted into Belgium since the Royal of the 30th of August, 1865, the transit trade Holland and Germany towards England became confined sheep, of which large numbers were shipped in the steam-Antwerp to London and Harwich.

is the following statement from

TONNAY-CHARENTE (FRANCE).

employment of land in this Consular district varies considerably, according to the locality and the nature of the the northern parts, consisting partly of deep alluvial are devoted principally to the cultivation of wheat other corn crops, beans, &c.; this land is mostly very and will bear a succession of crops without manure with but very little preparation; the southern districts occupied by vineyards for the production of brandy, wine produced being of inferior quality, and used mainly home consumption; the midland parts are variously occupied, wheat being a principal crop; the poorer low grounds are reserved for meadows and grazing: vines are again the chief feature in the islands and lands along the coast, but in those localities the produce gives inferior brandy, though vinegar of superior quality.

The favourite port for the shipment of corn is Marans, at the embouchure of the river Sevres, the valley of that river being particularly rich in agricultural produce.

The Consul at Amsterdam reports the following official statement of the agricultural doings in

THE NETHERLANDS.

Wool.—The public sale held in the early part of the year by the Netherlands Trading Company went off at steady prices for the fine sorts, and Cape wool of good quality was specially sought after. The news of the cessation of hostilities in the United States of America, instead of creating a rise, as was generally anticipated, brought about a fall in prices, particularly in consequence of the fact that enormous quantities of Australian and Cape wool were sent into the London market, and that the news arrived in Europe just at the shearing time. The sales during May and June in London, comprising 160,000 bales, went off feebly, and at from 6 to 8 per cent. under the prices of March.

Grain.—The business in wheat was again limited to what was needed for the interior; but various circumstances, such for instance as the firmness of foreign markets and the incessant wet weather, caused prices to ascend, so that there was actually a rise of from 40 to 60 florins per 2,400 kilos. on the prices paid at the commencement of the year. At this figure some quantities were even bought up for the steam mills, it being more advantageous to purchase on the spot than from a foreign market. What was done in rye was for the most part restricted to the requirements of the interior, and excepting March, when the breaking up of the ice made business more active, there was nothing much stirring, provincial wants having been satisfied during the summer, and in the autumn by imports from Belgium; nevertheless, towards the end of the year prices had risen considerably, and mainly through news from abroad. The most important transactions were again those on delivery, and extensive purchases were effected both for home and abroad, whilst prices fluctuated greatly. In barley there was little briskness other than in foreign produce, and either for home consumption or hulling. Prices rose gradually. The early country harvest was very small; the winter one, though far from plentiful, was better than that of last year. The news from Denmark and Holstein were both satisfactory as to quantity and weight.

Butter and Cheese.—The quality was on the whole satisfactory throughout the year; during the lengthened dry weather less so, but in the autumn the quality was excellent. The cattle disease, however, which made its appearance in August in the province of South Holland, slowly and gradually spread itself to North Holland and Utrecht, thereby causing fears for the supply in the forthcoming year. It is nevertheless worthy of note that the murrain did not manifest itself in the great grazing provinces of Friesland and Groningen.

The Consul at Konigsburg gives a detailed account of the corn trade of

PRUSSIA.

The quantities shipped to Great Britain have been as follows:

	Wheat.	Rye.	Barley.	Oats.	Peas.	Seed.
In 1865	714,194	45,382	50,022	50,067	149,027	239,850
1864	451,075	120,284	90,469	150,065	262,898	269,336

Prussian scheffels of 5½ to 1 imperial quarter.

The importation from Poland was 642,161 scheffels less than in 1864, and the importation from the province at least 1,550,384 scheffels less.

Wheat.—The prices of this article were ruled as usual by the British markets, and in March from 40 to 62 and 72 sgr. per scheffel. In summer there was little business. In August prices rose to 60, 80, and 86 sgr., according to quality, and in September stagnation again took place.

Rye.—The total exportation of this article only reached about one-third of the preceding years, but rye is the article for speculation on delivery-contracts, and although the price of rye in the beginning of the year was 33 to 35 sgr. per scheffel, contracts for delivery in May and June were closed at 37½ to 39 sgr., and reached 40 to 40½ sgr., and no notice was taken of the value in other places, such as Dantzic. This speculation was kept up on account of the apparent bad harvests in this province and in Poland, and the Polish dealers sold their real stocks on the spot, and bought contracts for delivery in autumn 1865 and the spring of 1866, and such contract prices were forced up to 64 sgr. per scheffel in December. The consequence has been that considerable quantities of rye, 10,000 asts, were in the warehouse, so that a want of food is not probable. But the prices of the day for real effective loco rye is not in proportion to the contract prices. The result will have to be seen.

Barley is consumed chiefly in the province. The inquiry in England for barley for feeding purposes from 23 and 35 sgr. to 36 and 45 sgr. per scheffel. The quantity harvested was not small, but the quality, particularly of large barley, inferior.

Oats were nearly all used for home consumption. Small parcels were shipped to England at gradually rising prices, 21, 22, to 26 and 30 sgr. per scheffel.

Peas.—The quality was particularly bad, so that they mostly could only be used as fodder, and some cargoes went to England for this purpose. The better parcels were eagerly bought up for human food, for which they are in much request here. Prices for yellow and blue peas were from 55 to 65 sgr., for grey 65 to 80 sgr. per scheffel, according to quality.

Beans.—The quality was very small; they were shipped to England. Prices were from 57 to 67 sgr. per scheffel.

The Consul in Spain, writing from Vigo, gives interesting figures as to the condition of the cattle in

GALICIA.

At the present moment, in which England is, and has been, suffering so greatly from the cattle plague, it cannot but be interesting to present some detail as regards cattle in this part of Spain, and the great increase in that branch which has developed itself within a period of six years in the four provinces of Galicia, as shown by the subjoined return printed by the General Department of Statistics, and published in January last:

Return of Bulls, Cows, Oxen, and Calves, in the undermentioned Provinces.

	1859.	1865.	Increase in Six Years.
Corunna	133,829	255,446	121,617
Lugo	100,908	184,953	48,045
Orense	76,464	142,314	65,850
Pontevedra ...	67,549	173,642	106,093
Total ...	378,750	756,355	341,605

The disease known as rinderpest or cattle plague has not hitherto invaded Galicia, nor, as far as I can learn, Spain.

AGRICULTURAL STATISTICS.

The following documents have been forwarded from the Home Office to the Lord-Lieutenants of the different counties:—

"Whitehall, 20th July, 1866.

"My Lord,—I have the honour to transmit to your lordship the copy of a letter, with its enclosures, which has been addressed to this department by the Board of Trade; and I request that your lordship will be so good as to cause the purport of it to be made known generally to the magistrates of your county. Her Majesty's Government have no doubt that your lordship will concur with them in opinion that it is important to obtain with as much accuracy as possible the information which the Board of Trade is endeavouring to procure, and they trust that the county magistrates will readily give any assistance in their power towards the attainment of this object.—I have the honour to be, my Lord, your Lordship's obedient servant, "S. H. Walpole."

"Office of Committee of Privy Council for Trade,
"Whitehall, 23rd June, 1866.

"Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to request that you will inform Secretary Sir George Grey that, as arrangements have been made by this department for the collection of returns of the extent of land in Great Britain under the various crops in the present year, my Lords are very desirous that the county magistrates in Great Britain should be again requested to afford the Government their valuable assistance in obtaining from the several occupiers of land information respecting the agriculture of the county. My lords have already expressed their obligation to the magistrates for their cooperation in the collection of the live-stock returns, which could not have been obtained in so complete a manner without the help and influence of the magistrates and other country gentlemen. The Board of Inland Revenue have undertaken the distribution and collection of the schedules prepared by the Board of Trade for the return of the acreage of crops; and my Lords trust that the officers employed upon this occasion will be able to carry out this inquiry as successfully, and with as little objection on the part of the occupiers, as the officers who were charged with the duty of collecting the returns relative to live-stock. I beg to enclose, for the information of the magistrates, copies of the form of schedule which will be issued for the return of crops, and of the directions for the proper filling up of the schedule which will accompany it. The return will only be required from occupiers of and above five acres of land, and the schedules will bear the Post Office stamp for free transmission to and from several occupiers. My Lords trust that the magistrates will be good enough to endeavour to remove any prejudices upon the part of their tenants or other neighbouring occupiers against making a return of the extent of their crops, which is only required for public information, and will only be published in an aggregate form for counties, or other large divisions of the country. The occurrence of war in many of the corn-exporting countries of Europe causes a knowledge of the producing capacity of the United Kingdom to be a matter of considerable interest at the present time.—I have the honour to be, &c., J. Emerson Tennent.—The Under Secretary of State, Home Office."

In the form of schedule enclosed there is a table, headed with the names of the various descriptions of crops grown in this country, and the grower is requested to fill in the number of acres he has in each. It contains an assurance that the returns of individual occupiers will not be published.

NORTHUMBERLAND AGRICULTURAL SOCIETY'S SHOW.

The annual Show of the Northumberland Agricultural Society was held on Thursday, July 26, in Mr. Horsley's field at Alnwick, being the seventh time which the show has been held at that place since its establishment. The weather, unfortunately, was the most unfavourable that could be possible for an agricultural show. Rain fell in torrents. There was, however, a large and influential assemblage of the gentry and farmers of the neighbourhood.

JUDGES.

Leicester Sheep.—Mr. W. Torr, Aylesby Manor, Grimsby; Mr. G. Angus, Beeford Grange, Lenthorpe, Hull; Mr. F. P. Lynn, Mindrim Mill, Wooler.

Cheviot and Half-bred Sheep.—Mr. Charles Borthwick, Yeavering, Wooler; Mr. John Jardine, Arkleton, Langholm; Mr. M. Thornton, Thornton, Morpeth.

Horses for Agricultural Purposes.—Mr. Thomas Hunt, Thornington, Wooler; Mr. James Scott, High House, Alnwick; Mr. John Turnbull, Branton, Alnwick.

Horses for the Field.—Mr. James Cookson, Neasham Hall, Darlington; Mr. Thomas Gibbons, Burnfoot, Longtown, Carlisle; Mr. John Clay, Winfield, Berwick-upon-Tweed.

Swine and Implements.—Mr. C. Wilson, Hipsburn, Alnwick; Mr. N. Milne, Faldonside, Melrose; Mr. Goodrick, Dilston.

Wool.—Mr. Joseph Humble, Newcastle-upon-Tyne.

The following were the awards:—

LEICESTER SHEEP.

Premiums open to the Kingdom of Scotland, and the County of Northumberland, only.

For the best Ram of any age, £10, and second, £5, Rev. R. W. Bosanquet, Rock, Alnwick.

Third, £2, A. Bell, Linton, Kelso.

Commended, J. Angus, Whitefield, Morpeth.

For the best Shearling Ram, £10, Rev. R. W. Bosanquet.

Second, £5, A. Bell.

Third, £2, W. Purves, Burfoot, Kelso.

Highly commended, G. Torrance, Sisterpath, Dunse.

Commended, J. C. Bolem, Low Trewhitt, and G. Torrance.

For the best pen of five Ewes (to have reared lambs this season), £4, J. Angus, Whitefield.

Second, £2, Messrs. Langdale, Newton Red House, Morpeth.

For the best pen of five Gimmers, £4, Messrs. Dinning, Nilston Ridge, Haydon Bridge.

Second, £2, Rev. R. W. Bosanquet.

LEICESTER SHEEP.

Open to the United Kingdom, with the exception of the Kingdom of Scotland and the County of Northumberland.

For the best Ram of any age, £6, and second, £4, J. Borton, Barton House, Malton.

For the best Shearling Ram, £6, and second, £4, J. Borton.

CHEVIOT SHEEP.

Open to the United Kingdom.

For the best Ram of any age, £6, G. Borthwick, Cowbog, Kelso.

Second, £4, Thomas Elliot, Hindhope, Jedburgh.

For the best pen of 2 two-year-old Rams, £4, and second, £2, Thomas Elliot.

For the best pen of 2 Shearling Rams, £4, and second, £2, Thomas Elliot.

For the best pen of five Ewes (to have reared lambs this season), £4, Thomas Elliot.

Second, £2, Robert Shortreed, Attonburn, Kelso.

For the best pen of five Gimmers, £4, T. Elliot.

Second, £2, R. Shortreed.

HALF-BRED SHEEP.

For the best Ram of any age, £5, R. Mathison, Wandylaw, Chathill.

Second, £2, George Barber, Titlington Mount, Alnwick.

For the best pen of five Ewes (to have reared lambs this season), £3, Messrs. Scott, Alnham, Alnwick.

Second, £2, M. H. Dand, Hauxley, Acklington.

For the best pen of five Gimmers, £3, James M'Lain, Snipe House, Alnwick.

Second, £2, R. Mathison, Wandylaw.

HORSES FOR AGRICULTURAL PURPOSES.

For the best Brood Mare, to have a foal at her foot, or be in foal at the time of the show, £10, Messrs. Browell, Apperley, Stocksfield.

Second, £5, H. Railton, Snittlegarth, Wigton.

Commended, John Henderson, Horsley Hill, South Shields.

For the best Colt or filly, three years old, £5, F. Potts, Ovington, Prudhoe.

Second, £3, John Henderson.

For the best Colt or Filly, two years old, £5, J. Rutherford, Way-to-Wooler.

Second, £3, J. Henderson, Horsley, South Shields.

Commended, R. H. King, Wooperton, Wooler.

For the best colt or filly, one year old, £5, and second, £3, Messrs. Hills, North Charlton, Alnwick.

For the best Brood Mare, with a foal at her foot, or to be in foal at the time of the show, £10, M. Brown, Wiggenly, Wigton.

Second, £5, John Hogg, Hazon.

For the best Colt or Filly, three years old, £5, J. B. Booth, Killerby.

Second, £3, George Dove, Wark, Coldstream.

For the best Colt or Filly, two years old, £5, J. B. Booth.

Second, £3, Messrs. John Bowes and Co., Gateshead.

For the best Colt or Filly, one year old, £5, A. Robson, Alnmouth, Alnwick.

Second, £3, R. Dand, jun., Field House, Bilton.

Premium given by his Grace the Duke of Northumberland.

For the best Horse or Mare, five years old, and under ten years old, a Silver Cup of the value of £20, to which the Society added £10, and there was a sweepstakes of 10s. each, Thomas Sutton, Alwent, Darlington.

Highly commended, Henry Railton, Snittlegarth, Wigton; Joseph Bainbridge Fife, Newcastle-on-Tyne.

Premium given by the Earl of Tankerville. Open to the United Kingdom.

A Silver Cup of the value of £20, to which the Society added twenty sovereigns, for the best Horse or Mare for hunting purposes, £20, Thomas Gee, Dewhurst Lodge, Sussex.

Highly commended, The Right Hon. Lord Ravensworth, Ravensworth Castle, Gateshead.

Premiums given by W. B. Beaumont, Esq., M.P.

For the best Stallion for agricultural purposes, £10, and second, £5, Messrs. Hills, Alnwick.

SWINE.

For the best Boar of the large breed (of any colour), £4 John Dyson, Adelphi Hotel, Leeds.

Second, £2, Joseph Wilson, Woodhorn Mains, Morpeth.

For the best boar of the small breed (of any colour), £4, R. E. Duckering, Northope, Kirton Lindsay.

Second, £2, C. W. Graham, Leeds.

For the best Sow of the large breed (of any colour), £4, John Dyson.

Second, £2, R. C. Duckering.

For the best Sow of the small breed (of any colour), £4, R. C. Duckering.

Second, £2, S. H. Smith, Galagate House, Norham.

For the best pen of three Sow Pigs, of the large breed, under sixteen weeks old, £2, John Dyson.

For the best pen of three Sow Pigs, of the small breed, under sixteen weeks old, £2, R. E. Duckering.

WOOL.

For the best five fleeces of Leicester Wool, £3, John Angus, Whitefield, Morpeth.

For the best five fleeces of Cheviot Wool, £3, R. Donkin, Ingram, Alnwick.

For the best five fleeces of Half-bred Wool, £3, Robert Donkin.

IMPLEMENTS.

A special prize of £10 for the best Manure Distributor was equally divided amongst the three following competitors:

Messrs. T. E. Colegrave, Newcastle; Mr. W. Thompson, Alnwick; and Messrs. Wilkin and Dickman, Alnwick.

Messrs. Brigham and Bickerton obtained a prize for their Buckeye Reaping and Mowing Machine.

An EXTRA PRIZE of £10, offered for the best combined machine or drill for sowing corn and grass seeds, was awarded to Jacob Wilson, Woodhorn House, Morpeth, for Sainty's combined seed drill and horse hoe. Mr. John Spencer, 5, Euston Road, King's Cross, London, entered a protest against Mr. Wilson receiving the prize, on the ground that the machine exhibited was not a combined corn and grass seed sowing machine, as required. The committee will consider the protest.

THE DINNER

was held in the Corn Exchange, at four o'clock, Lord Ravensworth in the chair, and Mr. W. B. Beaumont, M.P., in the vice. There was a large company present.

THE BRIDLINGTON AGRICULTURAL SOCIETY.

The thirty-first annual show of this society took place on Wednesday, July 25, and the field used last year, belonging to Mr. J. Kirby, was appropriated to the same purpose on this occasion. Although there were no cattle exhibited, about the same amount as before, viz., £300, were offered in prizes, those which would have been given for cattle having been applied in augmentation of the list in the other departments. Notwithstanding the absence of the shorthorns which have been from year to year so much admired at this exhibition, the entries were more numerous than last year, when they amounted to 447. On Wednesday the total number was 456, and was made up of the following proportions: Sheep, 15; horses, 180; pigs, 16; poultry, &c., 149; and implements, 96.

THE JUDGES.

OF HUNTING, ROADSTER, AND COACHING HORSES.—Mr. John Brooks, Immingham Grange, Ulceby, Lincolnshire; Mr. John B. Booth, Killerby Hall, Catterick; and Mr. Charles Wood, South Dalton, Beverley.

OF SHEEP, PIGS, AND AGRICULTURAL HORSES.—Mr. John Wood, of Stanwick Park, Darlington; Mr. Richard Rowlay, Welldale Beck, Ebberston, York; and Mr. J. H. Priestley, Altofts, Normanton.

OF IMPLEMENTS.—Mr. George Crowe, North Dale; Mr. Matthew, Cranswick, Reighton; Mr. Thomas Boynton, Ulrome Grange; and Mr. G. S. Simpson, North Burton.

PRIZE LIST.

SHEEP.

Shearling tup, £5, Mr. John Borton, Barton House, Malton; second, £2, ditto.

Pen of five shearling tups, £5, Mr. E. Riley, Beverley; second, £2, Mr. J. J. Simpson, Hunmanby.

Aged tup, £4, Mr. John Borton; second, £1, ditto.

Five shearling wethers, £1, Mr. G. Walmsley, Bridlington.

Pen of five breeding ewes that have suckled lambs to the 6th July, £4, Mr. Richard Lovel, Knapton, Rillington.

Five shearling gimmers, £4, Mr. E. Tindall, Rillington; second, £1, Mr. G. Walmsley.

Fat wether, ewe, or gimmer, £2, Mr. E. Tindall.

HORSES.

Hunting mare and foal, £4, Mr. John Smith, Marton Lodge; second, £1, Mr. J. Simpson.

Three years old hunting gelding, £4, Mr. Geo. Holmes, Beverley; second, £1, Mr. Robert Danby, Routh, Beverley.

Two years old hunting gelding or filly, £3, Sir George Cholmley, Bart., Boynton Hall; second, £1, ditto.

One year old hunting gelding or filly, £2, Mr. Edmond Hornby, Flotmanby.

Three years old hunting filly, £3, Mr. Wm. J. Simpson, Easton; second, £1, Mr. Henry Robinson, Carnaby.

Coaching mare and foal, £4, Mr. Edward Robinson, Nafferton; second, £1, Mr. H. Woodcock, Flambro'.

Three years old coaching gelding, £4, Mr. Robert Wise, Sewerby Field; second, £1, ditto.

Two years old coaching gelding or filly, £3, Mr. Robert Wise; second, £1, Mr. Geo. Walmsley.

One year old coaching gelding or filly, £2, Mr. George Walmsley.

Three years old coaching filly, £4, Mr. W. Coleman, Haisthorpe; second, £1, Mr. M. Rounding, Fraisthorpe.

Roadster nag or mare, £4, Mr. Joseph Robson, Windle Beck, Ganton; second, £1, Mr. F. C. Matthews, Driffield.

Roadster mare and foal, £4, Mr. John Major, Sledmere Grange, Malton; second, £1, Mr. John Simpkin, Bridlington.

Two-year-old roadster gelding or filly, £2, Mr. John Crompton, Thornholme.

Mare and foal for agricultural purposes, £4, Mr. George Simpson, Marton; second, £1, Mrs. Smith, Bempton.

Horse or mare for agricultural purposes, £3, Mr. W. J. Simpson, Easton; second, £1, Mr. G. Simpson, Marton.

Two-year-old agricultural gelding or filly, £3, Mr. Thomas Cranswick, Rudston; second, £1, Mrs. Sawden, Flambro'.

One-year-old agricultural gelding or filly, £2, Mr. John Burdas, Thwing; second, Mr. J. Grainger, Auburn House.

Pair of horses of either sex for agricultural purposes, worked during the season, £4, Mr. J. Simpson, Field House, Hunmanby; second, £1, ditto.

Nag or mare pony not exceeding fourteen hands high, £3, Mr. Henry Warley, Frodingham.

Nag or mare pony not exceeding twelve hands high, £2, Master T. Smith, Ulrome.

Stallion for hunters, £4, Sir George Cholmley, Bart., for Angelus.

Stallion for roadsters, £4, Mr. J. Cook, Nafferton, for Denmark.

Stallion for coach horses, £4, Mr. John Johnson, Brigham, for Prince Arthur.

Stallion for agricultural purposes, £4, Mr. W. Simpkin, jun., Burton Agnes, for Nonpareil.

Four-year-old hunting gelding or filly, £5, Mr. Joseph Robson, Windle Beck, Ganton; second, £2, Mr. Thomas Gee, Dewhurst Lodge, Wadham, Sussex.

Hunting mare or gelding four years old or upwards, £7, Mr. T. Sutton, Alwent, Darlington; second, £3, Mr. Joseph Robson, Windle Beck.

SPECIAL PRIZE.—Silver cup, given by Sir J. V. B. Johnstone, Bart., M.P., Mr. T. Sutton.

PIGS.

Boar, large breed, £2, Mr. John Dyson, Adelphi Hotel Leeds.

Sow or gilt, large breed, £2, Nr. John Dyson.

Boar, small breed, £2, Mr. Charles W. Graham, York-road, Leeds.

Sow or gilt, small breed, £2, Mr. George Chapman, Seamer, Scarbro'.

Mr. John Smith, of Marton, gave an extra prize of £1 for a pig of the middle breed, and it was awarded to Mr. Graham.

IMPLEMENTS.

Messrs. Samuelson and Co., York, 20s. for royal prize patent self-raking reaper, with side delivery in sheaf.—Mr. Wm. Sawney, Beverley, 10s. for improved winnowing machine, and 5s. for self-raking winnowing machine.—Mr. John Baker, Bainton, near Driffield, 20s. for improved 3-horse reaper, with new patent lift and chain; 10s. for Yorkshire prize waggon with wheels 4ft. 9in. and 3ft. 4in. high, tires 3in. by ½, patent axles and brass caps, and with pole; and 10s. for 4 by ½in. 25 cwt. Newcastle cart.—By the Beverley Iron Waggon Company (Limited), 5s. for improved linseed-cake mill, and 5s. for American grist mill.—Messrs. E. W. and G. Osgerby, Beverley, 10s. for improved market cart.—Mr. Wm. Smith, Foston, 5s. for sixteen feet self-feeding sheep rack.—Mr. Harrison, Dixon, Carnaby, 10s. for an assortment of implements.—Mr. J. J. Burbery, Bridlington Quay, 5s. for new patent Leicester ornamental open flower vase.—Mr. Matthew Dale, Bridlington, 10s. for improved 9-rowed corn drill, complete; 5s. for improved turnip and mangold drill; 5s. for drill for small seeds broadcast; £5 for general assortment; 5s. for improved horse rake with iron teeth; 20s. for patent swathe delivery reaping machine for two horses; and 20s. for patent mill for bruising agricultural produce.—Messrs. P. and W. Smithson, Bridlington, 20s. for assortment of implements.

Between one and two o'clock about 130 of the members and their friends partook of luncheon, which was provided by Mr. Crannis, of the Black Lion Hotel, in a tent upon the ground, when Lord Hotham, M.P., presided.

PONTEFRACT AND WEST RIDING AGRICULTURAL SOCIETY.

The ninth annual exhibition of this society for horses, sheep, pigs, implements, ane dogs, was held in a large and commodious field belonging to Mr. R. Hirst. There was no show of cattle. The entries were, notwithstanding this drawback, very good; and all classes were in excess, in point of numbers, over last year.

The horse show occupied the principal portion of the ground, and it certainly attracted the most attention; for the ring, in which the judges tested the various classes, was surrounded by hundreds of people anxious to see the animals, and also to witness the jumping, which is an important feature at this show. The best roadster of any age, for which the Mayor of Pontefract offered a cup of the value of £5, induced the greatest competition; and a considerable time elapsed before the judges had discharged their arduous duty. They eventually gave in their award to Mr. W. Ingle, of Westfield House, as the winner of the cup; Mr. J. A. Thornton, of Wakefield, taking the premium of £2 offered as a second prize; and Mr. W. Norfolk, of Knottingley, was third. Mr. Atkinson, of Woodleford, and Mr. Simpson, of Fairburn, were respectively highly commended and commended.

The sheep were in excess of last year as regards numbers, and the quality was undoubted. For the best pen of five long-woolled ewes, the silver cup was taken by Mr. Waide, of Ackworth Moor Top; Mr. Carr, of Baln Lodge, being second. Mr. Brown, of Ackworth; Mr. Parkinson, of Upton Hall; Mr. Longstaff, and Messrs. Moxon and Sons, each showed in this class. Wether and gimmer lambs were also well represented, Mr. Boulton, of Kirk Smeaton, taking first prize in both, Messrs. Moxon and Sons being second in each class; Mr. Waide, of Ackworth, being third for wethers, and Mr. Makin, of Woodfield House, third for gimmers. For tup lambs Messrs. Moxon and Sons, Mr. Thomas Leng, Darriugton; H. Salt, Esq., Methley Park; Mr. D. Longstaff, Mr, Petty, Hensall; Mr. Joseph Shillito, Wrangbrook; Mr. Waide, Ackworth Moor Top, and Mr. J. W. Brook, Monkroyd, competed; and after a careful consideration of the merits of each pen, the first prize was awarded to Mr. Petty, and the second to Mr. Salt.

The show was a very successful one in all respects; and the company was also large.

PRIZE LIST.

SHEEP.

Judges.—Mr. L. Baxter, Hurst Courtenay, Selby.
Mr. T. Johnson, Chevot, near Wakefield.
Mr. J. Kirby, Pocklington.

Long-woolled Ram of any age.—£3, H. Poskitt, Darrington; £3, J. Petty, Hansall; £1, J. Shillito, Wrangbrook.

One-shear Ram.—Silver Cup, S. Hirst, Kellington; £2, ditto.

Pen of 5 Long-woolled Ewes which have suckled lambs this season up to July 1.—Silver Cup, F. C. Wade, Ackworth Moor Top; £2, T. Carr, Baln Lodge.

Pen of 5 Shearling Gimmers.—£2, W. Makin, Woodfield House; £1, J. Vandravart, Roall; 10s., J. Stables, Moorhouse.

Pen of 5 Shearling Wethers.—£2, T. Carr, Baln Lodge; £1, R. Mann, Campsall; 10s., T. Taylor, Darrington.

Pen of 5 Shearlings of any cross breed.—£2, T. Taylor, Darrington; £1, R. Mann, Campsall; 10s., ditto.

Pen of 5 Wether Lambs, Long-woolled.—£2, T. Boulton, Kirk Smeaton; £1, W. Moxon and Sons, Pontefract; 10s., F. C. Waide.

Pen of 5 Gimmer Lambs, Long-woolled.—£2, T. Boulton, Kirk Smeaton; £1, W. Moxon and Sons, Pontefract; 10s., W. Makin, Woodfield House.

Pen of 5 Lambs of any cross breed.—£1 10s., W. Brown, Ackworth; 5s., John Allright, Fairburn.

Tup Lamb.—£1 10s., J. Petty, Hensall; £1, H. Salt, Methley Park.

HORSES.

Judges.—Mr. William Dodgson, Monk Bretton, Barnsley.
Mr. John Heptinstall, Kirk Bramwith, near Doncaster.
Mr. Thomas Hodgson, Wreslentack, Howden.

Thorough-bred Stallion of any age.—£2, J. R. Dennison, Minsthorpe.

Stallion for draught purposes.—£2, J. Cutt, Thorpe Audlin.

Three-year-old draught Gelding or Filly.—£2 10s., W. Roberts; £1 10s., J. Vandavart. Commended, T. Spink.

Two-year-old draught Gelding or Filly.—£2, G. Wilson; £1, J. Dixon. Commended, G. Hammond.

One-year-old draught Colt or Filly.—£2 10s., B. Child; £1 10s., G. Wilson.

Draught Brood Mare and Foal.—£3, T. Carlton; £1 10s., M. Amery. Highly commended, H. Tonkinson; commended, J. Dixon.

Roadster, Horse or Mare, of any age.—Silver Cup, given by the Mayor of Pontefract, W. Ingle; £2, J. A. Thornton; £1, W. Worfolk. Highly commended, W. S. Atkinson.

Roadster, Mare and Foal.—£2, B. Lister, Hillam; £1, John Fletcher, Kirk Smeaton; 10s., Robert Foulds, Kellington.

Pair of Agricultural Horses used solely for agricultural purposes.—£3, J. Robinson, Staningley; £2, G. Pearson, Pontefract.

Pair of Dray Horses.—£2, W. H. Barker, Pontefract.

Coaching Colt or Filly 4 years old.—£2, John Green, Hemsworth; £1, J. A. Brown, S. Hiendley.

Coaching Brood Mare and Foal.—£2, J. Moore, Hillam; £1, E. Simpson, Fairburn; 10s., J. Moore.

Hunter, expected to leap the hurdles provided by the committee.—Silver Cup, Mr. Sanderson, Womersley Grange; £3, J. Austin, Castleford. Commended, J. R. Dennison, Minsthorpe.

Three-year-old Hunting Gelding or Filly.—£2, B. Micholson, Stourton Grange; £1, John Liversidge, Wrangbrook.

Two-year-old Hunting Gelding or Filly.—£2, H. Proctor, Thorpe Audlin; £1, C. Oxley, Hambleton. Commended, J. R. Dennison, Minsthorpe; J. Rowley, Norton Priory; C. Oxley, and W. S. Wood, Grove.

PIGS.

Judges.—The same as for Sheep.

Boar, middle breed.—£1, Major Thursby, Snydale Hall.

Boar, small breed.—£1, George Waddington, Knottingley.

Sow in Milk or Pig, middle breed.—£1, E. Farrar, Pontefract; 10s., Henry Clayton, Dorrington.

Sow in Milk or Pig, small breed.—£1, W. Parkinson, Upton Hall; 10s., Mr. Carr, Monkhill.

Two Store Pigs under 10 months old.—£1, John Foster, Pontefract; 10s., Rev. G. Pease, Darrington.

COTTAGERS' PIGS.

Store Pigs of any breed.—£1, Wm. Hewitt, Thorpe Audlim; 15s., John Foster, Pontefract.

THE YORKSHIRE AGRICULTURAL SOCIETY.

MEETING AT YORK.

The visit of the Prince of Wales to York during the past month has served to solve a difficulty of some standing. Despite all that has been urged to the contrary, it is possible to put back the show to the second week in August without any detriment or inconvenience whatever. Of course, the presence of His Royal Highness might be made to answer in some degree for the attendance; but with such entries of horses, hounds, and so forth, the grouse-shooters would, under almost any circumstances, have mustered as strongly as they did on Wednesday, Thursday, and Friday, Aug. 8, 9, and 10. Never, indeed, was there such a gathering of leading sportsmen on an occasion of this kind, as at every other turn you encountered a houndsman or horseman of some celebrity; and here, over hunters and hounds that is, the success of the meeting centred. There was a good show of sheep, a fair entry of pigs, and so much to see after was there in other ways that the Shorthorns were never missed until one came across the Editor of the *Herd Book* or Major Gunter's managing man. For an exceptional year there could not have been a more brilliant demonstration, although some of the members of the Yorkshire Council are beginning to fear that the sporting element may be carried a little too far for the legitimate business of the association. With the trials of the reapers postponed until the week following, it is very certain that the implement makers were put quite into the shade, for "the nags" took two good long days to judge, during which time few of the spectators ever left the ring-side; and on Friday they swarmed like flies over a treacle-pot about the hound kennels, if there was little enough to see of what was being done on the flags, except on the payment of a somewhat serious extra-charge. At a merely local gathering like that in Cleveland, a hound show may be a very acceptable addition to the proceedings; but we very much question whether at a meeting of the calibre of the All-Yorkshire, such an accessory does not interfere with the pristine and more proper objects of an agricultural exhibition. We speak with almost as strong a leaning in favour of field sports as Mr. Parrington himself, the most able secretary and manager that ever took a meeting in hand; but even his energy may at times run away with him, and when we get the Shorthorns back it will be a nice point to determine whether the hounds shall not be drafted?

There would still be ample material for the ruling passion to feed upon, as the Yorkshire Horse Show, by far away the finest we have ever seen, was essentially a show of hunters, roadsters, and other hacks. Many of the classes of both carriage and cart-horses were but indifferently filled, and it was only when the judges came to the lighter breeds that they began to ponder and dwell, with eight or ten before them of an entry, any one of which was well worthy, as most probably he had previously taken a first prize. The Yorkshire Society has an admirable rule, or rather no rule in this way, that is well worthy of imitation by the National Society—as to the effect, That no animal is necessarily debarred from further competition from having taken the chief honours of any former meeting—and thus in the class of thorough-bred stallions there were three or four again exhibited that had been already distinguished as the best of their kind. The entry, which was really extraordinary for its excellence, reached to twenty-five nominations, including such well-known horses as Cawston, St. Clare, and King Brian, the first, second, and third last year at Doncaster but not one of which was noticed here; Cavendish, the first-prize stallion at Stockton; Motley, another well-known horse in the ring; Strathern also a frequent winner; Piccador, King Fisher, and Fingal, with such a runner as Welcome to give éclat to the class and to remind one of what had been done in other ways over Knavesmire. Of these, Cawston, a hunter all over in appearance, drags his hind-legs after him worse than ever; so much so, as to give one the notion that he must be ricked in the back, and he was early out of it; while St. Clare only the more and more justifies all we said of him at Doncaster as being about the worst-shaped animal that ever took a prize; nor does King Brian improve with age, having gone in the back, with his neck looking longer than ever, and, as usual, "dishing" fearfully when set agoing. Cavendish, on the contrary, never showed to more advantage, having been very judiciously eased of the heaps of flesh they were wont to put on him, so that he came out a fine combination of blood and power, and the general opinion outside the ring was that he must be first. Strathern, again, had a deal of quality with symmetry, barring a little hollowness in his back; and Piccador is a very neat, lengthy, good-limbed horse, with well-laid shoulders, though a trifle heavy at the points. Fingal is another taking nag, long, level, and deep; and Norwood by Orlando a very bloodlike gentleman, with a fine top, good arms and thighs, but light of bone below the knee, and terribly "scarified" by the irons. Of those, however, with which the world is less familiar, the judges and the public alike settled over a couple of chesnuts, one of which, Mr. Dennison's three-year-old, The Grand Master by The Great Unknown, is a really sweet horse, with a good sagacious head, a fine neck, and plenty of length and bloodlike character, put on to a short leg, as at his age quite a wonder for growth and good development. We believe the three-year-old was highly and deservedly commended, though, as the Society publishes no prize-list, there is nothing to go by, beyond the first and second as placed on the telegram board—a want that is still a sad flaw in the arrangements of so otherwise well-conducted a meeting. There was no such uncertainty over the place of the other chesnut, as, aftet a deal of deliberation, the judges awarded the first prize to Sir George Cholmley's Angelus by Orpheus, a six-year-old, of great substance, with a fine old-fashioned hunting fore-hand, very high in his withers and very deep in his girth; running up light in his back ribs, but with good quarters, thighs, and arms, set off by short pasterns, rather woodeny forelegs, and a very remarkable lack of thorough-bred, bloodlike character. Still there was no question but that Angelus was a favourite with the public, who would have put him next to Cavendish, whereas the second place fell to Motley, looking certainly very well in his coat, but anything but a true-made horse, being short in his shoulder and light in his girth, and, so far as appearances went, with at least half-a-dozen others to be preferred to him according to his qualifications for getting weight-carrying hunters. We should have put Cavendish, Strathern, Piccador, Grand Master, and Beloochee, a horse with a deal to like, all or any before the son of Touchstone.

The roadster stallions ran up to thirty-four entries, the best of these being chiefly cob roadsters, with the judges going all for coarseness, and taking as their prize horse an animal called the Norfolk Cob, and Norfolk bred on both sides of his head. This is a short powerful beast of burden, a heap of flesh above, with great limbs under him, but an infamous disher, and altogether one of the olden and of a by-gone time. The chesnut put second was of much the same common stamp, the class being far better represented by other entries, such as Mr. Richardson's No Name, a very neat one, with a good top, but falling away in his hocks; or Messrs. Cockshot's Renovator, a horse of fine character and good action, with a nice sensible head, a light neck, level and lengthy, with strong limbs. Mr. Cook's Denmark, Mr. Shepherd's Young Deerfoot, and Mr. Triffitt's Sir Edwin Landseer, a horse full of quality, were also worthy of commendation, though the two best of the entry seemed from the outside to be Mr. Hart's well-known All-Fours, so neat in his frame, and so true in his action, and Mr. Triffitt's Young Fireaway, by far the best shaped one of the lot, and quite a model of a clever cob; but Mr. Spooner stood in the way here, and rejected the one-eyed brown for spavins.

Of the thirteen brood mares for breeding hunters most of them were pretty well known, including Mr. Clark's Marigold, although the first prize went to another that has also seen twenty summers, Mr. Scott's Plucky, the second at Newcastle. Sally, which was then first, is now without a place, although we infinitely prefer the former award; Mr. Brown's mare being of a rare stamp, with plenty of power, without lumber, and wearing well at sixteen years old. Mr. Clark's mare, which took second, though herself very bloodlike, with big limbs, was chiefly noticeable for her foal by Blair Athol, with bone below the knee of about the substance of a Cochin China chicken! The roadster brood mares were a very moderate lot, with the chief honours bestowed on a brute with tremendously heavy shoulders, light bone, and hammering action, as all over about the worst of a bad class. Amongst the two-year-old hunters, on the contrary, we come upon one of the best horses of the show, Mr. Booth's Bird of Passage, that made his mark at Birmingham, and again placed himself here, being long, low, and deep, with plenty of bone, breed, and good looks, as a prize horse all over. Mr. Darley's colt by Woolwich is another very clever colt; Mr. Vaughan's sample of Cavendish's get, a deep compact hunter in embryo, and Mr. Morley's Collegian, by Oxford, very stylish and bloodlike. Lord Middleton and Mr. Duncombe also sent a couple of promising young ones into this class, but there was not much to fancy in Sir George Chomley's short sickle-backed son of Orpheus; nor anything extraordinary to select from the eight or nine two-year-old hunting fillies; though the three-year-old hunting geldings were worth going all the way to see. They reached to twenty-five in number, and with more than half of these fit for first prizes as times go, led off as they were by Mr. Holmes' Tom by Augur, a winner at Birmingham and elsewhere, as booked to be first again here. But Tom, with all his fine power, hardy character, great limbs, and beautiful forehand, falls away sadly behind, and from his hips to his hocks wants making over again. This is especially noticeable when he is in action, as he looks to go lame, so badly does he draw his legs after him; and he deservedly got no nearer than second, being sold for £300 nevertheless. Mr. Clark, of Howden, sent in a couple of chesnuts, of which The General, by Magnum, was preferred, though we should go for the other, called The Colonel, by Sir John Barleycorn, out of Marigold, a very deep compact powerful horse, with good ends, great limbs, and plenty of fashion. Mr. Clarke had another in that should have also been commended, a compliment that, if not extended to the class, might be fairly shared by such entries as Mr. Danby's, Mr. Milbank's half-brother to the Bird of Passage, Mr. Gilbert's, Mr. Groves', Mr. Hugh Percy's, Mr. J. B. Booth's, Mr. Thomas Young's, and Mr. Tom Cole's Alfred the Great. Mr. Robson's black, a nice light hunting filly, was a long way the best of a short class, with Mr. Garbutt's showy, good stepping hackney mare a moderate second. The four-year-old hunters were another wonderful lot of thirty-seven, though we do not go with either the first or second on the award. The Master of Arts sadly lacks breeding, while he is stiff in his movements, as he looks like a very wooden horse to ride; and Buffoon, though with some good looks, has grown short and high, and is also not perfect in his action. For our own taking, the nicest horse of the class was Mr. Barkworth's Firebrand, a beautiful sample of the modern hunter, well put together, full of fashion, and quite up to a pace without distressing himself. Mr. Hall, of Scarboro', had also another valuable horse here, with plenty of substance and quality, and chiefly disfigured by the absurd title of *Stomach Ache*, a poor and not very refined joke on the horse being by Magnum Bonum. Mr. Robson sent a very useful black by King Caradoc, and, amongst the other commendations, being utterly ignorant of what the judges did in this way, we should include Mr. Robson's Emigrant, Mr. Marley's Admiral, Mr. Robson's Bantam, Mr. Peirson's Lucifer, Mr. Dunhill's chesnut, Mr. Nelson's Motley horse, Mr. Bruce's Emperor, and Mr. Hawxwell's Death Struggle—another disagreeable name, as associated with Strychnine, the sire. The four-year-old hunting fillies were again a moderate lot in comparison with the colts of the same year, and the winner, Alice, a harness sort sort of mare, weak behind, and with awkward fumbling action; whilst Mr. Brown's second had a deal more hunting character, if by no means perfection at all points. The five-year-olds up to 14 st. furnished a fair class of twenty-six, with the winner, The Moor, despite his wearing looks and true action, objected to, and Mr. Jackson Everatt's Memnon, two or three times previously the best of his class, now passed over, though a wonderfully nice horse, and infinitely to be preferred to the slack-backed chesnut which took second place. A very good-looking horse again is Mr. Botterill Hornby's; while Mr. Vaughan's bay was only spoilt by his shoulders being so badly placed; and Ingleby, though quickly put out of it, never looked so well. There were many other good ones in this class, as there were in the light division, amongst whom young Mr. Peirson led off on a corky, fine-framed horse by Flatcatcher, followed by a son of Canute, so deep and level, and with such good limbs, that but for his loaded shoulder he might have stood higher. Sir George Chomley's chesnut mare, Mr. Marley's Austin, Mr. M'Cartney's The Falcon, and Mr. Robinson's Red Wine were all commendable; and Mr. Sutton, with a deep, compact son of old Farnham, led the way to the great horse and great class of the year. The conditions of this went for hunters of six years old or upwards, geldings or mares, by a thorough-bred horse; and the entries included Sprig of Nobility, Hawk's Eye, Sportsmam, Silas Marner, Voyageur, and some four-and-thirty others of more or less repute. Still it it was all over before they even came into the ring; for Voyageur has been winning all over the country since he came out at Islington, though he is far better under cover than in the open. Barring his loaded shoulders he is a magnificent horse to stand alongside, but he marches rather than walks, and goes a deal worse in his faster paces; though, to be sure, never was there so poor a hand at showing a nag as his owner. Mr. Jacob Smith, on the contrary, is about the finest rider in the ring we ever saw, and his style should be a lesson to many a London dealer or dealer's man. Instead of keeping his horse fidgeting on the curb, he gives him head and really lets him walk. It was quite a treat, in fact, to watch the way in which he handled The Swell, and we believe the man won quite as much as his horse. Still, The Swell is a very taking nag, a hunter all over up to a certain weight, with famous action, and indeed a deal better going than stripped, as he is very slack in his back ribs, a point in which Sir George Wombwell's horse also does not shine, although when at work we should back him to go faster and longer than the winner. Nevertheless it was a good bold decision, and pretty generally approved. Of the other previous prize-winners, Sprig of Nobility, a fine grown horse at six years old, has quite lost his action, and nothing went worse; while Silas Marner was the most elegant horse on the ground, though he has not filled out or furnished an ounce of late; and Sportsman is still a model of a hunter to look on, but for his faulty forelegs and cramped action. There were some twenty more or so, that any man might have been well satisfied with—a grey of Lord Middleton's that went like oil; another of Mr. Hall's, all over like business; a very varmint mare of Mr. Macbean's; and an old-fashioned cramp-country nag of Major Gunter's. Mr. Sykes, again, had a nice yellow chesnut, and as one looked through the drafted at the lower corner, it was with a feeling of regret that the prizes could not be multiplied. We only hope that the judges did their duty, and commended the class.

In the other half of the ring—a mistake, by the way, as there should be two separate rings if only out of regard to the convenience of the public—in this division another set of judges were hard at work over all sorts and all sizes, from cart stallions to ponies of sundry hands and inches. Of thirty weight-carrying hacks Mr. Percy's Crafty was once more first, the third year in succession at the All-Yorkshire Show, and we hear she will never be exhibited again, saving in the *Farmer's Magazine*, for which her portrait by Corbet has just been taken. Mr. Pease's well-known Whitefoot, another very clever hack, was a good second in a good class, with young Mr. Jonas Webb's Birmingham mare well up. In the lighter troop of thirty-one, British Queen, having quite recovered herself, scored again for Mr. Milward, though it was a near thing with three or four of them; but amongst the Ladies' Hackneys the reading was rather the other way, as they were such a middling lot that the difficulty, as they say in another ring, was to "name the winner." The ponies up to fourteen hands made a very good show, both for numbers and merits, and the Judges put them about and about until people became weary of watching. However, the telegram ultimately proclaimed that they had fixed on a useful commonish chesnut as first, with the much smarter Dunstan as second. It is somewhat remarkable of this said Dunstan that Mr. Milward can always pass him as within the fourteen hands standard in the North, but that the pony gets above it when he travels South! There were some other very sweet things in this class, but the smaller ponies only ran up to half-a dozen, and the sorely tried authorities had little more to do. There was certainly a special prize for pairs of carriage horses, which Mr. Pease won with two good-looking browns, the one by Ashgill and the other by Veltigeur! We cannot say whether Mr. Spooner happened to be in the way when the other pair of blacks were put through their paces, but one of them will certainly make a noise in the world. Nevertheless, they received a second prize, as it is said that the first horse in one of the most important classes was a rank roarer! But then the Veterinary Inspector was only consulted in any case of difficulty.

Of the coach horses, generally, the best class was that comprising the stallions, with an entry of four-and-twenty, most of which were brought into the ring, though with a repetition of the Doncaster award in Prince Arthur first and Candidate second. Mr. Johnson's horse, that, like Crafty, has now been first three years in succession, is wearing well, if rather over-topped; while Candidate has all the character of the carriage horse, being very handsome, but by no means too gaudy for his purpose. Mr. Bell's Burland, another stallion of fine quality, was the third on the list. Mr. Burton's Young Rueben has a deal of grandeur in his appearance; and the judges clung to four or five more before they arrived at "a determination." In fact, both sets took their time over it, and, if anything, were rather too deliberate for the spectators, if not for the exhibitors, who were for hours in the very tortures of prolonged suspense. One missed Venus from the Cleveland mares, though Rose who now succeeds to the place has plenty of fashion, good bone, and a clean leg among her recommendations; while the Warwickshire mare, placed second, has a rather varmint wicked look, with a lean head set on to her neck as fine as a race-horse's should be; but the class was a small one. Then, the two-year-old coaching geldings only reached to four or five; and the fillies of the same age to but three entries, of which the second appeared to be the more lengthy and level of the lot. The three-year-old harness-horses made a far better front, and, only after the stallions, this was the best class of the section, with twenty-four nominations, and a deal of competition whe it came to conclusions. The fillies once more were not so strong, and the coaching mares without foals counted to no higher than five on the telegram.

In plain truth, as we have already intimated, neith the coachers nor the agriculturals did much to make the great York Horse Show. There were, for instan but three cart-mares with foal at foot in the catalog and one of these we could not find in her box; as of tw year-olds in work there were in all just half-a-dozen, th first prize from Newcastle being a clever, active goo bodied filly, though without any honour in her ow country the other day at Alnwick. The three-year-ol dropped down to four of no very remarkable merit, the three pairs in work would bear no comparison wi what we have previously seen "in couples" either in th north or south, though Messrs Jewitt's blacks, tw great powerful geldings, were worthy of their pla if with nothing very particular to beat. Ev the entries of cart-stallions stopped at fifteen, against tweny-five thorough-breds, twenty-four co horses, and thirty-three roadsters. Nor beyond th two or three placed was the quality very remarkab The first and third horses are both by England's Glo and the actual winner, with length, depth, and substa on a short leg, has already earned some similar distinction at Durham and Morpeth. The handsome Clydesd Champion, the best at Doncaster and second at Howd was now passed over; but Lincolnshire, who has b first and second, turn and turn about, here and at th Royal meetings, still keeps his place in front, and a wonderfully powerful true-framed horse he is. He looked, moreover, very fresh and well on Knavesmire, though, as we did not see him out in company with his conqueror, we will not cavil at the decision, if side by side we should have given the old one the preference.

The sheep show was both a large and a good one, more particularly in the long-wool classes, where the Lincolns seldom or ever came out to greater advantage. With size, wool, and symmetry, they were very firm in their touch, affording ample evidence of a due proportion of lean wholesome meat—a merit not always to be met with in a long-wool, especially when prepared for public exhibition. In the old class the rams of Mr. Abraham and Mr. Marshall were very grand and good; indeed the Barnetby sheep as a six-shear is quite a wonder for his age, and no doubt the judges made some very proper allowance in this way when awarding him the first prize. Mr. Marshall's second, the best shearling at Plymouth and Doncaster, is as handsome a specimen of the sort as was ever turned, while he clipped 21lbs. of wool, and he pulled down 30st. 12lb., jockey weight, when started from Branston for York. This flock gained some further notice in the extra stock for a capital wether, and Mr. Abraham's pen of gimmers were very neat and sorty, showing a deal of breed and style; as a nice antithesis to the third-prize lot, so poor and plain that they could only have been placed from the lack of competition, for the class was a small one. Amongst the shearling rams neither Mr. Abraham nor Mr. Marshall was in any force, the highest honours going to Mr. Richardson for an admirable, firm ram, a long way the best of the entry, as Mr. Williams's second, though broad and strait, lacks quality, and Mr. King Tombs's third, the first at Reading a month or two back, is by no means a first-rate sample of the Cotswold. The Longford gimmers, again, would be nothing more than moderate about home, though Mr. Tombs is going the right way to improve them, as he gave the 210 gs. the other day for a ram at the Broadfield sale. Mr. Beale Brown had also some entries in each of these "other Long-wool" classes, but they made no mark, and Mr. Reid, of Elkstone, a really prime three-shear ram that has been distinguished in his time about home. In the North, however, the Lincolns fairly ran away from the Cotswolds, as we did not hear a decision in this section objected to. There was more discussion over the shearling Leicesters, where Mr. Barton lost his lead to Mr. Cresswell, who won with a large well-matured sheep, carrying a capital fleece, but clearly wanting in some of the fine character of the Leicester. The Barton flock were certainly superior on this point, as they have never shown more quality, though occasionally spoken to with something like disdain as "those Yorkshire Leicesters." The second-prize sheep has already been first this season at Burlington and Driffield, and the first-prize two-shear was also first in 1865 at Plymouth and Doncaster, and first again during the past few weeks at the local shows. The reaction was thought to have set in at the Royal Show last year, and certainly there was an admirable display of the breed at York, though good old Mr. Wiley stood over his rams, and somewhat plaintively told of how many years he had bred *pure* Leicesters, if he could no longer take prizes with them. Amongst the other exhibitors were Mr. Riley of Kipling Cotes, Mr. Marris of Ulceby, Mr. Stamper, Mr. Wright, Mr. Simpson, Mr. Brown of Spalding Moor, and Mr. Lovel of Knapton. Mr. Lovel's ewes were a very pretty pen, beginning with clean thorough-bred heads, and answering as well to the hand as to the eye—that is, so far as one was enabled to prove them, as they were carefully smeared over with some precious ointment that acted as a caution to keep off. Amongst the gimmers, Mr. Brown managed to separate the two Barton pens with some very neat well-bred animals, though completely out-sized by the first-prize pen, which were marvels of growth on early and well-developed maturity. The short-wools were by no means so uniformly good, as but for Lord Walsingham's entries this branch of the business would have fallen through. With a few Shropshires from Escrick, Knutsford, and Shrewsbury, the Sussex Downs carried all before them, Mr. Woods having no one to make a race with him amongst the shearlings, and finishing first, second, and third. The wool, however, of some of the Merton sheep was badly "set," or the awards might have read differently. This was particularly the case with the commended ram in the old class—a second-prize sheep at Plymouth, and that in better form might have been second here. The first place went clearly enough to a ram not exhibited last year, but with a deal of good about him, a true type of head, and every sign of a fine constitution. The second was another thick useful sheep, entered by Mr. Waters, of Motcombe, who, we regret to say, died on the Saturday previous to the show. Beyond the pure Downs Mr. Mansell was deservedly commended for a Shropshire ram; and in a moderate class of gimmers Mr. Davies, of Mere Hall, took a second prize with a pen of the same sort. Lord Wenlock had also some success with his Shropshire flock, but the sheep were put together in a very slovenly manner; and the steward, or the shepherd, or whoever is answerable for the duties of showman, should not escape "the wigging" he so well deserves. Considering how handy Escrick is to York, a much better stand might have been made with his Lordship's flock. There were a few Blackfaces of no remarkable merit, and amongst the extra stock Major Gunter made up a very nice lot of Cotswold ewes and lambs.

From the want of milk Mr. Mangles is not this year an exhibitor, nor does Mr. Wainman intend showing anything, and the pigs were decidedly the weak place of the programme. In fact, we are inclined to think that a Yorkshire pig show is becoming something of a mistake. You come upon an immense brute, fearfully over-fed, and often enough not able to stand, with little or no coat on his back, but still horribly coarse in his character—and over his ugly head a placard intimating that this is the first prize! There were some of just this sort amongst the large breeds at York, the big sow being as bare as if she had been shaved; and the big boar with little beyond his mere size to recommend him. To prove this kind of beast, strip him of his superfluous flesh, and you will not find a more ungainly animal in creation than a big white pig in store condition. Many of the small and middle-size pigs were again but moderate; and about the best boar was one entered by Mr. Clark, of Glusburn, a new exhibitor, who only breeds a few, and who does not as yet seem to have fallen into the Yorkshire fashion of shearing; for his pig, beyond his good head, capital shoulders, and lengthy frame, has a famous coat, not too thick nor too coarse, but just what a well-bred one would wish for. The best class, however, was the companion one of sows of any breed, where Mr. Dyson won with a "blue-white;" whilst four or five more almost as good received some compliment from the authorities. The small sows, under twelve months old, made up another excellent class; but the small boars of the same age were generally so indifferent that, after awarding the one prize, the judges refused to give in a reserved number. There are, though, few prettier pigs in the north than Sir George Wombwell's whites, good and true enough to be exhibited in store condition, where Newburgh won with a pen of three, full of quality, and as "matchable" as Cleveland carriage horses.

Flags were flying, bells were ringing, and beds were rising to a guinea each, when the Prince started for the hound show on Friday morning, and where nearly all the crack packs in England were to come in competition. Amongst these were the Badminton, the Heythrop, the Cottesmore, the Rufford, Lord Fitzwilliam's, the Brocklesby, the Bramham Moor, the York and Ainsty, the Puckeridge, the Badsworth, Lord Eglinton's, the Wynnstay, Lord Middleton's, the Holderness, Lord Portsmouth's, the Vale of White Horse, the Lothians, the New Forest, Lord Poltimore's, the Cotswold, Mr. Harcourt Johnstone's, the Tynedale, and the Sinnington. This was far away the largest hound-show ever got together, but, from the look we had through the kennels, we much question if it was the best; and we saw nothing like the Fife bitches, Lord Wemyss' wonderful three couple, or the grand, handsome hounds Mr.

Hill was wont to send on to the flags when these comparisons were first instituted by that same Mr. Tom Parrington, who has now gained the countenance of royalty. Still it is said the Prince took more to the horses than the hounds, and no wonder, either, for it requires a very keen hand to go thoroughly with the instincts of a "houndsman."

With a notion of shedding after the manner of Mr. Jonathan Gray, who came down specially to see how they carried out his West-of-England system, the implement makers were never so comfortably housed, as never did they muster in such force at the Yorkshire Meetings. With the exception of the Howards, the Hornsbys, and Alfred Crosskill, nearly all the leading firms made entries, whilst these were backed by a number of more local manufacturers or agents. The prize list this year was confined to harvest implements—mowers, haymakers, rakes, and reapers. The trials of the mowers have already come off, and those of the reapers are fixed for this week; so that there was little or no excitement on this part of the showground; and, as we have already intimated, what with horse judging, hound judging, the visit of the Prince, and divers other attractions all over the city, business was never so bad. It was "just" a fair, and a dull fair too; for there were few or no actual novelties. Fowler's locomotive cultivator was certainly parading a small ring, and Ransomes had sent another locomotive all the way from Ipswich by road, taking eight or nine days to do the journey, and knocking the two propelling wheels about terribly; so that we can scarcely be said to have arrived at perfection in this branch of mechanism. Then Nicholson of Newark had patented a steam hoist, after the idea of Mr. Scott Burn; but the wind and the rain put this all awry, as the jack-straws were also stopped by the elements. Rarely have the avenues of stands or rows of engines at work been so thoroughly deserted by the public as at York, even after the immense outlay incurred by the society and the exhibitors. It is not for us to say how this is to be done, but it is very plain that a little more interest must be thrown into what should be so important a feature in any such a festival, as the Machinery of the Farm.

PRIZE LIST.

SHEEP.

LEICESTERS.

JUDGES (for Leicesters and other Long-wools)—
W. Bartholomew, Waddington Heath, Lincoln.
J. Painter, Mount Verner Villa, Nottingham.
W. Sanday, Holme Pierrepoint, Nottingham.

Shearling Rams.—First prize, £15, R. W. Creswell, Ravenstone, Ashby-de-la-Zouch. Second of £10, J. Borton, Barton House, Malton. Third of £5, J. Borton.

Aged Rams.—First prize, £10, J. Borton. Second of £5, J. Borton.

Pens of Five Ewes.—First prize, £10, R. Lovel, Knapton, Malton. Second of £5, G. Wright, Broughton, Malton.

Pens of Five Gimmers.—First prize, £15, J. Borton. Second of £10, W. Brown, Holme-on-Spalding-Moor. Third of £5, J. Borton.

LINCOLN OR OTHER LONG-WOOLS.

(Not qualified to compete as Leicesters.)

Shearling Rams.—First prize, £15, J. W. Richardson, Willoughton, Kirton Lindsey. Second of £10, C. Williams, Carlton-le-moor-land, Newark. Third of £5, J. K. Tombs, Langford, Lechlade.

Rams of any other age.—First prize, £10, W. Abraham, Barnetby-le-Wold, Ulceby. Second of £5, T. B. Marshall, Branston, Lincoln. *Commended:* T. B. Marshall.

Pens of Five Shearling Gimmers.—First prize, £15, W. Abraham. Second of £10, J. K. Tombs. Third of £5, W. Chaplin, Tathwell, Louth.

SHORT-WOOLS.

JUDGES.—H. Fookes, Whitchurch, Blandford.
C. Randall, Chadbury, Evesham.
W. Rigden, Hove, Brighton.

Shearling Rams.—First prize, £15, Lord Walsingham, Merton Hall, Thetford. Second of £10, Lord Walsingham. Third of £5, Lord Walsingham. *Highly commended:* T. Mansell, Adcott Hall, Shrewsbury. *Commended:* J. Waters.

Rams of any other age.—First prize, £10, Lord Walsingham. Second of £5, J. Waters, Motcombe, Eastbourne.

Pens of Five Shearling Gimmers.—First prize, £15, Lord Wenlock, Escrick Park. Second of £10, D. R. Davies, Mere Old Hall, Knutsford. Third of £5, Lord Wenlock.

MOUNTAIN OR BLACK-FACED.

Shearling Rams.—Prize of £10, W. Rudsdale, Danby, Grosmont.

Rams of any other age.—Prize of £5, C. Smith, Broadgate, Westerdale.

Pens of Five Ewes certified to have reared lambs in 1866.—Prize of £5, C. Smith.

EXTRA STOCK.

Medal to T. B. Marshall (for two-shear Lincoln wether); and Medal to J. and E. Tindall, Knapton Hall, Malton (fo one two-shear ewe and one five-shear ewe).

PIGS.

JUDGES (for Large Breed).—W. Bartholomew.
J. Painter.
W. Sanday.
JUDGES (for Small Breed).—H. Fookes.
C. Randall.
W. Rigden.

Boars of a large breed.—First prize, £5, J. Dyson, Leeds. Second of £2, R. E. Duckering, Northorpe, Kirton Kindsey.

Sows of a large breed, in pig or milk.—First prize, £5, J. Lakland, Retford. Second of £2, R. E. Duckering.

Boars of a small breed.—First prize, £5, J. Crabtree, Shipley, Leeds. Second of £2, W. Hatton, Addingham, Leeds.

Sows of a small breed, in pig or milk.—First prize, £5, H. Abel, jun., Wigginton, York. Second of £2, W. Linton, Sheriff Hutton, York.

Boars of any breed not qualified to compete in the previou classes.—First prize, £5, W. Clark, Glusburn, Cross Hills Leeds. Second of £2, R. E. Duckering.

Sows of any breed, in pig or milk, not qualified to compet in the previous classes.—First prize, £5, R. Barrett, Sutton Mills, Cross Hills, Leeds. Second of £2, B. Calvert, Bingley Bradford. *Highly commended:* J. Gledhill, Normanton; J Dyson, and W. Sagar.

Three Store Pigs of any breed and of the same litter, from four to nine months old.—First prize, £5, Sir George O Wombwell, Bart., Newburgh Park. Second of £2, R. E Duckering.

PIGS NOT EXCEEDING TWELVE MONTHS OLD.

Boars of a large breed.—Prize of £3, R. E. Duckering.

Sows of a large breed.—Prize of £3, R. E. Duckering.

Boars of a small breed.—Prize of £3, W. Sagar, Saltaire Bradford.

Sows of a small breed.—Prize of £3, W. Holmes, Grove York.

EXTRA STOCK.

First Medal, R. E. Duckering (for pen of white pigs). Second Medal, M. Walton, Halifax (for middle breed gilt).

HORSES.

JUDGES FOR HUNTERS AND ROADSTERS.
E. M. Burbidge, Thorpe Arnold, Melton Mowbray.
Nicol Milne, Faldonside, Melrose, N.B.
S. Slater, North Carlton, Lincoln.

JUDGES FOR COACHING AND AGRICULTURAL HORSES.
W. Godson, Normanby-by-Stow, Gainsborough.
C. M. Nainby, Barnetby-le-Beck, Grimsby.
A. Turnbull, Middle Ord, Berwick, N.B.

Stallions, thoroughbred, for getting weight-carrying hunters.—First prize, £50, Sir G. Chomley, Bart., Howsham (Angelus). Second of £20, J. Casson, Burgh Sands, Carlisle (Motley).

Stallions for getting Coach-horses.—First prize, £20, J

Johnson, Brigham, Driffield (Prince Arthur). Second of £10, G. Holmes, Newbiggin, Beverley (Candidate).

Stallions for Roadsters.—First prize, £20, J. W. Pease, M.P., Woodlands, Darlington (The Norfolk Cob). Second of £10, W. Stilborn, Darlington (Pretender)

Stallions for getting Agricultural Horses.—First prize, £20, R. L. Moffett, Tanfield Lea, Gateshead (All Glory). Second of £10, S. Strickland, Headley Hall, Tadcaster (Lincolnshire). Third of £5, Mathew Reed, Beamish Burn, Chester-le-Street (England's Glory).

Brood Mares for breeding Hunters, with Foals sucking.—First prize, £10, W. T. Scarth, Keverstone, Darlington (Plucky). Second of £5, W. H. Clark, Hook House, Howden (by West Australian).

Brood Mares for breeding Coaching-horses, with Foals sucking.—First prize, £10, E. Robinson, Nafferton, Driffield (Rose). Second of £5, J. S. Tate, Budbrook Park, Warwick (Katy).

Brood Mares for breeding Roadsters, with Foals sucking.—First prize, £10, W. Major, Sledmere Grange, Malton (Polly). Second of £5, A. Cook, Huggate, Pocklington (Favourite).

Brood Mares for breeding Agricultural Horses, with Foals sucking.—First prize, £10, David Goundrill, Hagthorpe, Howden (Damsel). Second of £5, G. Linton, Low-street, Bedale (Jewel).

Two-year-old Hunting Geldings.—First prize, £10, J. B. Booth, Killerby, Catterick (Bird of Passage). Second of £5, H. Darley, Aldby Park, York (Minor Canon).

Two-year-old Hunting Fillies.—First prize, £7, W. Vaughan, Middleton-St.-George, Darlington. Second of £3, the Hon. W. E. Duncombe, M.P., The Leazes, Bedale.

Two-year-old Coaching Geldings.—First prize, £10, J. Appleyard, Wistow, Selby. Second of £5, J. Reader, Holme-on-Spalding-Moor, York.

Two-year-old Coaching Fillies.—First prize, £7, R. Myers, Harum Mill, Helmsley. Second of £3, C. Tindall, Scampston, Malton (Wild Flower).

Two-year-old Agricultural Geldings or Fillies.—First prize, £7, W. Cochran Carr, South Benwell House, Newcastle-on-Tyne (Trimmer). Second of £3, W. Parker, Oxton, Tadcaster (Diamond).

Three-year-old Hunting Geldings.—First prize, £15, W. H. Clark, Hook (The General). Second of £5, G. Holmes, Newbegin (Tom).

Three-year-old Hunting Fillies.—First prize, £10, Jos. Robson, Windlebeck, Ganton. Second of £5, T. Garbutt, Yarm (Sally).

Three-year-old Coaching Geldings.—First prize, £15, R. Nelson, Barton Hill House, York. Second of £5, J. Kirby, Barton Fields.

Three-year-old Coaching Fillies.—First prize, £10, R. Barker, Dunnington (Polly). Second of £5, J. Jackson, jun., Great Ayton (Cliff Lass).

Three-year-old Roadster Geldings or Fillies.—First prize, £7, W. Major, Sledmere Grange (Miss Giles). Second of £3, J. Ward, Bohemia, York (Grace Darling).

Three-year-old Agricultural Geldings or Fillies.—First prize, £10, J. Appleyard, Wistow. Second of £5, Thos. Upton, Allerthorpe (Rose).

Pairs of four-year-old and upwards Agricultural Geldings or Mares.—First prize, £10, W. and R. Jewitt, Brackenholme (Tom and Jack). Second of £5, S. Thompson, Skipworth (Diamond and Mettle).

Coaching Mares, from four to six years old, without a foal.—First prize, £10, G. Richardson, Moor Town, Beverley. Second of £5, H. Moore, Beverley.

Four-year-old Hunting Geldings.—First prize, £25, T. Gee, Dewhirst Lodge, Wadhurst, Sussex (Master of Arts). Second of £10, G. Holmes (Buffoon).

Four-year-old Hunting Fillies.—First prize, £15, T. B. Ireland, Tadcaster (Alice). Second of £5, T. Brown, Butterwick, Barton-le-street, Malton.

Five-year-old Hunters, geldings or mares, by a thorough-bred horse, and up to 14 stones and upwards.—First prize, £30, H. Jewison, Raisthorpe, Driffield (The Moor). Second of £20, W. Hartley, Rosehill, Carlisle (Templemore).

Five-year-old Hunters, geldings or mares, by a thorough-bred horse, and up to 12 stones and upwards.—First prize, £20, G. B. Peirson, Baldersby, Thirsk (Maroon). Second of £10, G. Ringrose, Flixton, Ganton (Canute).

Hunters, six years old or upwards, geldings or mares, by a thorough-bred horse.—First prize, £25, J. Smith, Humberton, Boroughbridge (The Swell). Second, Sir G. Wombwell, Bart., Newburgh Park (Hawk's Eye).

Gentlemen's Hackneys, of any age or sex, up to 14 stone.—First prize, £20, H. J. Percy, Howsenrigg, Aspatria (Crafty). Second of £10, J. W. Pease, M.P., Woodlands, Darlington (Whitefoot).

Gentlemen's Hackneys, of any age or sex, up to 12 stones and upwards.—First prize, £15, R. Milward, Thurgarton Priory, Southwell (British Queen). Second of £5, J. B. Barkworth, Willerby, Hull (Cornice).

Ladies' Hackneys, of any age or sex.—First prize, £10, W. B. Richardson, St. Mary's Lodge, York (Kitty). Second of £5, the Hon. Admiral Howard, Castle Howard (Columbia).

Ponies, above 12 and not exceeding 14 hands high.—First prize, £10, E. Tranmer, East Horsley, Northallerton (Viscount). Second of £5, R. Milward (Dunstan).

Ponies, not exceeding 12 hands high.—First prize, £7, J. W. Richardson, Willoughton, Kirton Lindsey (Uncle Tom). Second of £3, J. Mitchelson, Pickering (Fanny).

SPECIAL PRIZES FOR HORSES.—Pairs of four years old Carriage Horses to be shown in harness.—First prize, £30, J. W. Pease, M.P., Darlington (Ashgill and Voltigeur); second of £10, R. Smith, York.

EXTRA STOCK, HORSES.—First Medal, W. Brigham, Beverley (for half-bred hunting stallion, Wild Hero); second, R. Schofield, Howden (black coach-horse).

DAIRY PRODUCE.

JUDGES.—T. P. Dickinson, Stockton-on-Tees.
W. Wilson, York.

Cheese (not less than 1 cwt. in quantity, made since October 1st, 1865, the produce of one dairy).—£5, H. Saville, Rufford Abbey, Ollerton. Butter (fresh, 6lbs. in single lbs.)—£3, J. Nightingale, Guisbro'; £2, G. Daniel, Elvington; £1, Harriet Fletcher, Tadcaster.

WOOL.

JUDGE.—T. Clayton, Stainley House, Ripley.

Five hogg fleeces (long wool).—First prize. £5, T. Marris, Ulceby; second of £3, Wm. Blackburn, Stokesley. Five hogg fleeces (short wool).—First prize, £5, T. Mansell, Shrewsbury; second of £3, T. Marris. *Highly commended*, D. R. Davies; *commended*, Lord Wenlock.

SPECIAL PRIZE for the heaviest and best fleece of long wool.—J. Barker, Scoresby, Kexby.

HOUNDS.

JUDGES.—The Earl of Macclesfield.
The Earl of Portsmouth.
Lord Poltimore.
Lord Dacre.
Sir Watkin W. Wynn.
Mr. J. A. Thomson.

Two couples of entered Hounds, dogs (no hound being older than a seven-season hunter).—First prize, £20, Lord Yarborough; second of £10, Lord Poltimore.

Two couples of entered Bitches.—First prize, £20, G. Lane Fox; second of £10, Duke of Beaufort.

Unentered Hounds, dogs (pupped since 1st December, 1864).—First prize, £10, Sir J. Trollope, Bart.; second of £5, C. F. C. Colmore.

Unentered Bitches.—First prize, £10, Lord Yarborough; second of £5, Sir C. Slingsby.

Stallion Hounds (not less than three-season hunters, and certified to be the sires of living puppies).—Prize of £10, Lord Poltimore.

Brood Bitches (having reared litters since the 1st of December, 1865).—Prize of £10, Lord Middleton.

THE GENERAL MEETING

was held on Thursday, the Hon. Admiral DUNCOMBE, M.P., as President of the year, in the chair. Deputations attended from Scarborough, Thirsk, Malton, and Whitby. The subscriptions promised for the next year's show, at Thirsk, amounted already to nearly £800, and from Whitby to £700.

Sir J. V. B. JOHNSTONE, M.P., proposed that the next year's show be held at Scarborough, which was seconded by Mr. J. D. DENT, M.P.

Earl **Cathcart** proposed Thirsk, and the motion was seconded by the Hon. G. E. **Lascelles**.

Mr. G. **Legard** proposed and the Hon. W. G. **Eden** seconded Malton; and Mr. H. S. **Thompson** proposed and the Hon. W. E. **Duncombe** seconded Whitby.

On the votes being taken there were thirteen for Thirsk, eight for Malton, and for Scarborough and Whitby three each. The two latter were struck out and the votes taken for Thirsk and Malton, when there appeared fifteen for the one, and ten for the other. The show of the Society in 1867 will consequently be held at Thirsk.

On the motion of Lord **Cathcart**, Sir George Wombwell was elected President for the ensuing year.

The Vice-President and Council for the ensuing year were then appointed as follows:

Vice-Presidents.—The Duke of Devonshire, Earl Ca cart, Lord Wenlock, the Hon. Admiral Duncombe, M. J. Brown, and W. Rutson.

Council.—Lord Bolton, Lord Herries, Lord Wharncli the Hon. W. E. Duncombe, M.P., the Hon. W. G. Eden, t Hon. G. E. Lascelles, T. C. Booth, Sir J. V. B. Johnsto Bart., M.P., J. D. Dent, M.P., W. Hodgson, Sidney L. La B. T. Woodd, M.P., Major Gunter, P. Saltmarshe, G. Lega H. S. Thompson, Viscount Downe, J. Wells, T. C. Johns T. Garbutt, George Lane Fox, Major Stapylton, R. F. Sha F. Jordan, R. J. Bentley, Rawdon Briggs, T. P. Outhwai Robert Swann, John Peirson, S. Wiley, and T. Dawson.

The proceedings terminated with a vote of thanks to A miral Duncombe, the retiring President, "for having work so hard and so steadily throughout the year."

TRIAL OF REAPING MACHINES AT PETERBOROUGH.

Spite of wind and water the Peterborough Agricultural Society has managed to come out with one of the neatest "trials" of the season. The event had been fixed for Friday, Aug. 3rd; but though continued rain and storm necessitated a postponement, a clear-up on that morning brought many hundreds of farmers to the city on "spec," and consequently implement-makers were telegrammed for, and in the afternoon most of the entered machines were put through their paces. However, it was on Monday that the official trial came off, on Mr. Wagstaff's farm, at Woodston, within a long half-mile of the Peterborough Railway Stations; and a large number of spectators assembled to witness the contest for a couple of ten-pound cups. As to the general arrangements of the meeting under the able and obliging stewards—not forgetting the soul of the day's enterprise, namely, the ever-active and genial Mr. Barford, who in the toasting after dinner ("The three gentlemen who had been the main instruments in promoting this contest, Messrs. Amies and Barford and Mr. George Vergette") was so clamorously called upon to "say ditto" to his amiable partner Mr. Amies — we have only room to say that they met with decided approval, more particularly the prime midday *déjeûner*, in a really water-tight marquee. The weather was threatening from the very first, and it was only by the smartest practice in bringing each machine into play directly its forerunner had completed its round—in the first trial—that the business was put through before "the rains descended and the floods came." Showers, which wetted at intervals during the day, finally settled into a steady down-pour, quenching all enthusiasm about reapers; luckily, however, not until the fun was all over, and Mr. Wells, the chairman, had carried by acclamation thanks to everybody concerned, and had presented the pieces of plate to the winners, and the company had tasted bottle after bottle of champagne out of the "self-delivery" prize chalice.

"To-day, if ever," we expected, "will the testing be severe; for what crops are likely to be found upstanding staight and bright after the weather that has been raging for the last few weeks? Now, if ever, we shall find out which machine can best cope with a six-feet-strawed fifty-bushel-an-acre crop like those which in most places grow upon very high-farming, and which are now lying prostrate or standing in twisted shocks over thousands of acres in the Fen Level and elsewhere." But no: the crops were on the light land noted for ripening its corn early; the wheat was a nice crop standing about elbow high, with only a few slight patches laid low—the easiest job imaginable except that the wind blew rather too stormy and gustily; and the barley, with a two-and-a half to three feet straw, presented no difficulty beyond being wet, and therefore awkward in delivery. We were evident in for a nice easy trial, favourable to the machine maker the machine that should cut well would, undoubtedly, b a good test for the average of English corn fields; b which would be best adapted for bulky, lodged, and storm broken crops would by no means clearly appear. First o all, the wheat was "opened out" by that independe piece of mechanism which hails from Beverley, and with out which the stewards and judges on the occasion woul not be able to stir a step. The Beverley Company's machine charged boldly into the crop anywhere and in an requisite direction, without stoppage, laying its swathe t right or left hand as required. The other machines followed suit; and it was observed that all, or perhap nearly all, made their "preliminary" round without a hitch of any kind, though, when the actual competitio came, some of the machines seemed to have got nervou meeting with troubles they had before escaped. The firs trial was of the "self-delivering" machines, for which cup was offered by the Society. The competitors drew lots for their turns, and a very effective peripatetic *cordon* having been improvised, consisting of a gang of sturdy workmen carrying a rope to hold the crowd off the horses, the machines, and the officials, the machines in rotation were worked one course along all the four sides of a square of several acres. The judges were eminently practical hands—Mr. William Cranfield, of Buckden, Hunts; Mr. Jno. Walker Watts, of Orlingbury, Northampton; and Mr. Charles Derry, of Gedney, Long Sutton, Lincolnshire: they carefully followed each reaper, not remitting their attention for a single instant from the work before them; and we believe the universal opinion of the large gathering of agriculturists present exactly agreed with the verdict ultimately pronounced. Of course it must be borne in mind that the allowance of only one round to a machine makes sharp work for a judge as well as for a competitor; and this occasion furnished additional evidence in favour of a lengthened trial, instead of the haphazard draw-your-number, follow-somebody-else's-work style of contest, which necessarily obtains in brief trials, lasting but half a day, and giving nobody more than a few hundred yards' race.

The first machine tried was Burgess and Key's "screw-delivery" reaper. "What! that old thing come up again?" says somebody; "that has been out of date a long time." "But, my friend," says somebody else, "you have never seen *this* 'screw-delivery,' which is a bran-new machine, very different to the rather lumbering affair that you are speaking of." It appears that Messrs. B. and K., reflecting that a tool must have some solid value to effect its own sale at the rate it has done since they introduced it, decided upon combining the screw-platform with the new framing and driving-gear invented by Mr. Burgess Junior. And as this machine seems likely to make some figure in the world, we may as well try to describe to our readers what it really is. The general form is much like that of the old machine (as evident from our friend's little mistake above); the revolving conical "divider" picking up and laying outside corn over the cutters, the three red transverse screws on the sloping platform receiving the cut corn from under the reel, and delivering it in swathe behind the seat of the driver. But you notice at once that, while the width of cut is 5 feet 8 inches, as before, the total breadth of the machine from outside to outside is 8 ft. 6 in., instead of (as it used to be) 11 feet; so that it will pass through ordinary gateways. The makers tell us, also, that the weight is reduced from 15 down to 12½ cwt. In place of the stout but clumsy knife-beam of wood, we have here an iron one, much better for cutting close down to the ground in barley and short-strawed crops. An endless link-chain drives the reel directly from the main-wheel axis; and the first screw, instead of receiving motion by a strap, has its axis hinged, and carrying a pinion gearing directly with the main driving-wheel. The driving-gear for the crank-shaft, the crank and connecting-rod, and indeed the principal iron framing and adjustments of the machine, are all placed between the driving-wheel and the platform—packed as it were in a nutshell—one of the compactest and prettiest arrangements ever seen. The crank connecting-rod being very short (though three times the length of the stroke, which is the best proportion for giving strength without undue friction) is placed, not behind or in advance of the main-wheel, but in a line with the main-wheel axle, the knife-beam also being in the same line; so that when this wheel sinks into hollows or rises over hills the knife-beam does the same, and the machine is perfectly balanced. The crank being so low as to be on a level with the knife, avoids the usual downward thrust and hard rubbing and wear of the slide, correspondingly lightening the draught of the entire machine. The "performance" of this new tool is soon told. The cutting round all four sides of the field with smooth-edged knives, instead of the old sickle-toothed cutters, was perfect; but (as many people observed) "anybody can cut—the bother is in delivery." Well, the corn was laid (even on the windward side) in a regular and beautiful swathe, with less of the "two different angles" than we ever saw come from the "old" screw machine. The action of the first screw (next to the knife-beam) in instantly taking the cut corn back from the front, and so clearing the knives that nothing loose can stay for a moment to cause clogging, was admirable; and, indeed, the smooth motion of the whole screw delivery seems to be just what is required in dealing rapidly with very ripe grain. Owing to the slow motion of the reel—this having, moreover, only four blades, instead of six (and is to have a new mode of fastening the arms, in place of the wedges, which work loose in hot weather)—and owing to the platform being laid low and retiring back, so that the reel-boards do not touch any portion of the corn which has once fallen upon it, there is the least possible amount of thrashing. And the whole duty performed by the machine, with the obvious lightness of the work for the horses, at once commanded general approbation, and drew forth lots of opinions that this would be amongst the "favourites."

The next machine was Burgess and Key's improved "M'Cormick," which, with a rake carried by the revolving reel, sweeps off the corn in sheaf-bunches at the side. The "cut" is five feet, the stubble was left closely shaven, and the bunches were delivered tolerably square-ended and neat, with very little scattered corn, though much inferior in this respect to the work of the best-handled manual reapers.

Third on the list came the mammoth machine of the Beverley Iron and Waggon Company, which, propelled by a team of three horses, mows down a breadth of eight feet, delivering at either side in swathe at the rate of 25, 30, "quite commonly" 33, and, as a *maximum*, 36 acres in a-day. The cutting was close and good, excepting the occasional inequalities where the steersman raised the knife-beam in passing over furrows, and the swathe was beautifully laid, though on the windward side of the field the corn was caught once or twice upon the projecting bar. The capacity of this machine to cut the largest area per day, and to deliver in a well-laid swathe, was very apparent; but a heavier crop would have better proved its value, and in a short round the rather awkward turning of the machine produced an unfavourable impression on the crowd of criticising followers, who deem every delay a token of failure, whereas this particular reaper more than any other shows its full powers only in very large enclosures, or when worked to-and-fro along one side of a long field. Complete independence of any scythe-man for opening a crop will always be a grand point in favour of this machine; while lightness of draught in proportion to work done is another advantage to be added to the many possessed by this lately-improved form of what was really the original model and ideal of what a reaper should be.

Number four was Burgess and Key's side-sheafing M'Cormick—the old pattern, with the reel-rake. There was a choke once at starting on the windward side, and the sheaf-bunches were not well delivered, being much too rough, with too much loose corn trailed on the ground. The jerking motion of the rake is very imperfect in comparison with the smooth action now adapted in the "Improved" raker-off already described.

Hornsby's swathe-delivery machine came next, cutting exceedingly well and delivering a well-laid swathe, though the work was not quite perfect on the windward side. After turning the first corner, some loose corn, littered by the previous machine, catching in the knives caused a hitch in the cutting, a narrow strip of the crop being left only partially cut. This was all rectified by clearing the knives at the next corner. Now here comes in the inadequacy of short trials like these, which, though fair for one as another, partake too much of the character of a raffle. If Hornsby had followed his own machine, probably no annoying incident of the kind would have occurred; if the reaper had been stopped at once, and the straw removed, the long row of bad cutting would have been avoided; but then there would have been "a stoppage," and in going only a single round a machine loses all its credit with the public if seen to pull up with "something the matter." To succeed in a scamper of this sort, you want the most careful and cute handling of your machine, or else uncommonly good luck, or a little of both.

Mr. Cranston followed with Wood's machine, which delivers sheaf-bunches at the side by a rotary rake; and this, being a left-handed reaper, took the company by surprise by going round "the other way." On two sides of the field, it made good work, with a 5 feet cut; but the sheaves were considerably scattered, and ingenious as the automatic rake undoubtedly is, the motion was not smooth enough to please the eye, and there appeared to be a little awkwardness in seating the driver, so that he rides in some fear of his machine; and no wonder, when the rake once during the trial knocked his billycock off.

Number seven was Samuelson's "windmill"—as some people called it; in which four revolving arms on an upright axis operate, two as reel-boards laying the corn on the table, and two as rakes sweeping off the cut corn in sheaf-bunches at the side. The workman here is placed out of danger by being mounted upon the back of one of the horses—a position from which he can see little of what the machine is doing. The breadth of cut is 5 feet, but though the action of the rakes is smooth and regular, the sheaves on two sides of the field were certainly very rough—spread out too fan-like in form, some of them 7 feet across. On the other two sides of the field the work was very much better. Here, again, is another consideration telling against short trials, in which all the machines, no matter what may be their peculiarities of construction, or what position of the crop may suit them best, must go through the same unvarying ordeal. Different machines cut best on different sides of a crop, and in practical harvest-work perhaps none of the machines tried on Monday would have been made to cut all round, but only where they could perform most perfectly.

Another "self-delivery" reaper was on the ground; but as it deposits sheaf-bunches behind, the makers thought it would stand no chance against side-delivery machines, and therefore did not enter for the cup. The public were to have had the privilege of seeing it in operation, but the inclement weather forbade, so we can only report what was said of it by persons who had seen it work.

Burgess and Key's back self-sheaf-delivery reaper has their new gear-work and a four-bladed reel, one of the blades being a rake simply carried by the arms like a reel-board, without any mechanical action whatever. The platform is a plain board supported in a sloping position, as in Hornsby's, and the Beverley Company's swathing machines; but when the rake comes round after passing its lowest point, the platform is dropped like the ordinary tipping-platform of a manual-delivery reaper, only it is tilted by the machine instead of by a man's foot. To effect this, nothing more is needed than a cam on the axis of the reel, a bell-crank lever, and a connecting-rod. The action is the simplest and easiest possible; and the bunches are declared to us to be delivered with perfectly square ends and parallel straws, without the slightest littering of loose corn. What a wonder it seems that this was never thought of before!

The second cup, given by Messrs. Amies and Barford, the Peterborough implement-manufacturers, was for "the best manual-delivery reaping-machine."

The first tried was Hornsby's semi-manual reaper, delivering in sheaf-bunches at the side. The full cut, 5 feet, was taken only on the lay-over side of the field; but the sheaf-bunches were thoroughly well laid—in fact, by far the best that had been made during the trials. Everybody seemed to appreciate the combination of advantages in this machine, in which we have the rake-man, so indispensable in the heaviest crops, the discretionary power as to size of sheaves, easy delivery (leaving the rake-man nothing to do but gather the laid and twisted grain upon his platform), and side-delivery of the well-formed bunches, so that corn can be left untied for any time; while in districts where the hands are not yet accustomed to work in large gangs, the cut field can be "put out" in plots for separate parties to tie.

Unquestionably the best work of the day was accomplished by Cuthbert, with his one-horse machine, taking its full cut of five feet, the rake-men delivering at the side off a quadrant platform. Cuthbert is justly renowned as "the cleverest fellow in England with the rake"; and it is astonishing how, by whipping up a laid bit here and separating another there, and by a quick dip of the rake after each delivery preventing any scatter, he contrives to excel in performance. But the machine itself (an improved Hussey) is particularly strong in those parts which long experience in the field has shown to be most fragile; and though the platform is a fixture, with no mechanical facility for easing the delivery, it is probably the very best adap for bulky crops, in which the rake-man has enough to with his hands, without balancing himself to raise a f at every two or three seconds of time. The horse h rather hard pulling; but then the machine was kept its full width of cut.

Bamlett's one-horse machine did well, taking a 4½-f cut, and delivering excellent sheaves.

Next came Cuthbert's one-horse back-delivery reap taking 4½ feet breadth, delivering perfectly-laid bunch In this machine a new arrangement of gearing has be adopted, and the platform covered with sheet zinc, b being improvements upon the parts of the old machine

Samuelson's one-horse reaper made very good wo excepting that the sheaf-bunches were rather too roug laid on that side of the field where the crop overhung t platform. The cut is 4½ feet, the delivery effected b tipping slat platform. The peculiarity of this natty lit tool is in its single motion—that is, one wheel and pinion only—for driving the crank; and as this nece tates a slow rate of revolution, sufficient cutting action obtained by doubling the length of stroke (that is, d tance of vibration) of the knives, which instead of osc lating between two adjacent fingers, pass over two of th intervals, each cutter passing clean through a finger mi way of the stroke. The draught appears particularly ea for the horse.

The one-horse reaper of Pickaley and Sims, wi tipping slat-platform and rather light iron gearwork, al having a "hollow knife-bar" for securing lightness draught, did its cutting well; but the rake-man, not qui up to the art of handling the rake, allowed the slats of platform, when suddenly rising, to comb out some of top straws of the deposited sheaf-bunches, and so trail litter them on the ground.

Hornsby's one-horse machine, with five-feet cut tippi slat-platform, and globular bearing for the crank and co necting-rod, which lessens friction and draught, was ne put through its performance. The stubble was cut clo and even, and the delivery so skilfully managed that th sheaf-bunches lay neat and square ended, in the very be form for binding. By a knowing touch of the rake the few straws that the platform slats *will* catc when rising after depositing a bunch, these stra are carried instead of being littered, and so for part of the next sheaf. This dexterous use of rake a platform—working hand and foot in exact time, and on—is evidently practicable where you have a light medium crop to deal with; but in tackling a bulky stra and having to send off a big sheaf-bunch at every tw seconds (as in the case of most of the Fen crops), doubt whether the moveable platform, depressed and lifte by the man's foot, can equal the fixed platform, whic leaves the rakeman planted firmly on his feet, free t work his rakes to best advantage in gathering the unc corn together, and separating the cut sheaf for delivery.

Last of the series of manual reapers came Wood's one horse machine. This cut well; but the tipping slat platform (of which Wood is the original inventor) di not come up to Hornsby's in performance, the man depositing fair sheaves, but scattering a little here and there upon the ground. Still, as we have already said, what is one short round for a reaping trial, any more than for a Mace-and-Goss fight? And things do come fine on these occasions; for we heard one competitor apologize for his sheaf-bunches being inferior to those of another man, by remarking that "fewer people had followed him round, and so had not kept so much wind off him as off the other!"

After luncheon came the trial of the "selected" machines in the Self-delivery class. There were Hornsby's blue swather, the Beverley three-horse-power, Burgess d Key's "Young Screw" (if that is not a contradiction terms), and Samuelson's "Windmill." Acre plots had been set out in a field of lightish wheat, lodged only in few spots, without ridge and furrow, but having a ound-surface rough from want of rolling in spring; t too, and wet from the recent Aquarian weather; and the pieces of work had been "opened" in beautiful yle by the handy Beverley machine. All four com- titors started together at 3.38, and all making a quick of it. Burgess and Key were first up at 4.10, fol- ed by Hornsby at 4.11, and Samuelson at 4.11½; le the Beverley people, wonderfully unlucky, brought their last strip at 4.16. One acre in 50 minutes is bad cutting. How was it, then, that the 8 feet wide r did not finish 15 or 20 minutes earlier than the s? Well, it met with some nasty heaps of soil in crop; and in turning at one end, the driver, o great a hurry, unhooked one horse too soon, ing the trace-chain upon the spur-wheels of the ine so that it got fast jammed between two cog-teeth, the wheels had to be removed from the bearings be- the chain could be released. But a narrow plot was urable to showing off the expedition of this imple- ; seeing that its last breadth, out of only six or , was a mere strip, varying from a foot or two to , but which the whole 8 feet-wide machine had to separate journey to cut. Also, the time lost in round at the ends, by unhooking a chain, leading horse at right angles to the others, and then plac- rse and chain again in position, tells badly in up and down a-short plot. We noticed all four machines cut well, excepting when places came in their way, the ears lying forward in rection of the machine's advance. In these cases all alike left long straw, and scattered a few of the -cut heads on the ground. We observed, too, that occasional straws were tossed in the air by Burgess Key's reaper (having four reel-boards and a slow tion of the reel), more were thrown up by Hornsby's (having six reel-boards, at about the same speed of rotation of the reel), and more still were sent up flying by the Beverley machine (having six reel-boards and a more rapid speed of the reel). The swathes were well laid by all three swathing machines. Samuelson's sheaf-raker machine delivered bunches rather untidy, and too much spread.

Rain began to pour, and only a very short further testing was accomplished, upon a piece of good barley. The final results were that Burgess and Key's new screw-delivery swathing reaper won the Society's ten-pound silver cup, and Hornsby's semi-manual side-delivery sheafing-machine gained the other cup offered by Messrs. Amies and Barford. This latter was a "walk over the course," all the other competing machines having withdrawn on finding that a "*semi-manual*" was allowed to stand in the same class with "*manual*" reapers. Here is a very pretty puzzle for the debating-clubs. Hornsby's machine cannot deliver sheaves without the man, therefore it is a "manual-delivery" machine; or, on the other hand, the man cannot deliver sheaves without the endless chains driven by the machine, therefore it is *not* a "manual-delivery" machine. Which is it to be? What did Messrs. Amies and Barford mean when they framed the conditions of their offer?

The Peterborough Society can adduce in defence the precedent of "the Royal," which at Plymouth admitted and honoured Hornsby's reaper as "a manual delivery." But in future, Societies will have to alter the terms of the prize-sheets, and classify the machines as "automatic" or otherwise; though it would be a question even then in which class the Beverley reaper ought to go, seeing that it requires a man to steer and level it. And what is to be said of "manual" machines that deliver with the aid of rollers, webs, or tilting platforms hung on balance-levers or springs? "Delivery," too, important as it is, is not everything; and if prize-sheets name only this part of the mechanical operation to be performed, great misapprehensions are sure to arise as to what we really require in perfect reaping machines.

IAL OF REAPERS AND RAKES AT THE YORKSHIRE AGRICULTURAL SOCIETY.

is part of the York Meeting was made—and we may at say unnecessarily—a supplementary matter. What we by unnecessarily is, the corn cut on Tuesday and Wed- y might all have been experimented upon without injury week previous, and the oats would have been better if cut ys previously. There is no doubt that with the prepara- for the Royal visit to the show, and arranging for the sporting element in the shape of hounds and horses for ing up to them, the secretary and the stewards of the yard quite enough on their hands to do efficiently, and about duty we saw no defect nor heard any complaint. But postponement of the trials was a serious loss of time to y exhibitors, and would-have-been competitors, as well as at additional expense to those who displayed tenacity of ose and enterprise enough to stop over the Sunday and Mon- or in returning again to try their luck. Most of the men did compete were at York on Saturday the 4th, in expec- that the trials would come off early the following week; many of them were unable to leave the town or neigh- hood until mail-trains on Wednesday the 15th or Thurs- the 16th. About all this there was of course fair room grumbling, and when it is considered that, in consequence the show proper being followed up on Saturday with a re- w of upwards of 20,000 Volunteers, the ordinary price of s was multiplied by fives and tens, and other necessaries for ining the wear-and-tear of the body were considerably nced in price: it does not want further information to in- te that hotel bills were unduly heavy, and servants' expenses were correspondingly increased. If the Yorkshire Society would have the support of the implement makers, in this particular way especially, in years to come, the authorities must determine to adhere a little more closely to the proper objects indicated by the name of the institution; and if any curtailing be necessary, it must be in those features which are not strictly agricultural.

Partly from the above reasons, and partly because the question as to what is a manual-delivery machine and what is a self-acting one has not been sufficiently defined and determined, there was not the interest once looked forward to displayed in regard to these trials. Although all the principal makers had entered for competition and exhibited their respective machines in the yard at Knavesmire, Burgess and Key, Wood, Hornsby, and Samuelson declined to appear on the trial-field. This result, as a matter of course, would detract very much from the excitement of the event, whether or not any loss has been suffered from small patches of corn not having been cut down by these machines taking up the work of others as their lot migt have been cast. But these matters were so fully treated last week in the Peterborough report that we need only say every point therein impressed was fully confirmed at York. It seems to us that in these exhibitions of this kind of machinery the more instructive plan would be to let so many small fields or parts of large fields be set apart for each competitor, and let him go in and begin to cut it and finish it off just as he pleases. If premiums be offered, time and quality of work can be noted, and the judges' decisions come to accordingly. If this be not done, then it would be far better to let the money offered be appropriated to some other purpose, and the public display left to the abundance of enterprise possessed by the leading agricultural engineers. As it was, however, when any one had an opinion in favour of any machine, it could not be by this exhibition altered in the smallest degree; and where no clear idea was possessed by any anxious agriculturist, who wanted a machine to do the work of the men who have skedaddled from his neighbourhood, the impression could not have been otherwise than confusion worse confounded.

The Beverley Iron and Waggon Company were of course there, as York may be said to be part of their own ground, and the performance of their three-horse self-deliverer certainly astonished the few stray farmers who were present; while to the uninitiated and unsophisticated spectators, the dashing style of the machine itself and the independent manner in which it created a stream of corn, right or left, as required, begot in them something akin to a new sensation. But this work was done under almost every disadvantage, for it was mere pottering up and down or around patches with only about 80 or 100 yard slices; while no due preparation had been made for such a machine as this, as deep stetch furrows were formed where they were not required, and deeper water-furrows were made where they ought not to have been, as no water would collect on this soil if it were properly cultivated, and holes and troughs were not made for it to run into. Nevertheless, what was done by this machine was, under the circumstances, very effective, and the judges awarded its makers the 1st prize of £20. The 2nd prize was withheld on the ground that the two-horse machine by the Beverley Company was of the same pattern, and only smaller; therefore there was virtually no competition. This may be expedient, but it is not logic; for if the little machine did not compete with the big one, how was it the big one had a competitor?

The competition for the other prizes lay between Bamlet, Busby, Cuthbert, and Kearsley. This was for combined machines, and one-horse reapers, suitable for small occupations. On the Wednesday, Bamlet, Cuthbert, and Kearsley were put through a final trial. The cutting part of these machines is not the most difficult, as this operation in all of them is similar. But the variation of drop or tip and swathe boards is worthy of a note. Bamlet's is a "tip"-board as it rides on an axle in the centre. This machine came in better form on Wednesday, as the greatest possible amendments had been effected in altering its screws. It seems, however, that this tip is hung unnecessarily high, for as the cut corn is thrown off, the front edge rises nearly a foot up, forming a mouth into which corn may pass, and a projecting edge that may, under certain conditions of the standing crop, press the straws forward which the knives are just coming to, and thus cause some to be cut high, where this would not have happened with a drop-board, or if the axle of the tip had been less elevated. There is no advantage in this high "tip," and we have no doubt this objection will be rectified. The arrangement of this machine for regulating the swathe is also open to improvement, for it is too much of the form of a deep ploughing mould-board to admit of the corn falling readily to the tip-board. A sharp edge for the corn to fall on is certainly better for it to get clean off than are the broad curves of this sheet-iron swathe-breast. The cutting by this machine was excellent, as under the skilful raking by Mr. Bamlet's own hand, the corn was laid straight and regular; and for this work he was awarded the first prize of £20.

Kearsley took the second, of £10. The first trials of this machine were with a tilting platform, and the second by a self-regulating arrangement that did not prove to be a success. The latter consisted in a "putting-off-board," which may be described as a reversed swathe-board, fixed on the machine side. The object of this pair of boards, set for working the corn towards each other, was to enable the horses and machine to follow on in new work by passing astride the last cut swathe. But this did not do at all, and it cannot be made to do, so there the experiment may end. The judges were taken aback by this machine, however, when they tested it with the dynamometer. The draught of the three machines was as follows: "Units of power to cut a square foot"—Kearsley's, 14.2; Cuthbert's, 31.4; Bamlet's, 33.1. Thus, by this test the registry for Kearsley was less than half as against the other two. Whether the instrument be perfectly accurate in its action or not, there is no mistaking the easy action of Mr. Kearsley's machine; and anyone who watches the horses at work can detect its much lighter draught. This is a new machine brought out this year, and it is likely to cause some discussion and consideration among mechanical amateurs and professors. These matters we leave in their hands.

For the small-occupation prizes Kearsley was awarded 1st for his machine, and Cuthbert 2nd; while Bamlet received a high commendation. The main ground on which the judges awarded this first prize was the continued lightness of draught of Kearsley's machine. The cutting was a very poor performance, as the quantity for each machine was an irregular patch both as regards size and form; and as it lay flat in places, and the machines were worked all round, no matter how the fall of the corn was, it was anything but a persuasive display in favour of the machines. This merely confirms the opinion we have given above.

The horse-rake trials were not numerous. Page and Co., Bedford, were awarded 1st prize, and Allcock, of Ratcliffe-on-Trent, Nottingham, the 2nd. The Reading Iron Company had a well-made rake there, but a misconstruction in the form of the teeth was fatal to its success. Its points ran too much on the ground, instead of being slightly up and forward, from the bearing of the teeth being taken by the bottom curves. The men who made it were capital workmen; but as it did not properly perform what it was required to do, there the trial of course ended, a real lesson having been imparted for instructing the makers in perfecting the next article. Turner and Bishop brought a rake, which has some new arrangements, and which Mr. Turner thinks are great advantages; but, as this rake was also tailed off in consequence of its teeth standing in a scratching or scarifying form, the assumed advantages from the manner in which the teeth are hung were not shown; indeed they remained untried. We may say the construction of the teeth of a rake is the simplest thing in the world. If three or four common forks be taken into a meadow or field, and the prongs be run along the ground, the bottom "compass" or form of the tooth required may be soon ascertained. The bottom having been determined on, then the bow and the form of the top, and the method of hanging the teeth, may be settled according to taste, judgment, or any novel idea that one may have.

[We have heard that the chief reason of there not being more competition at York was from the same judges being appointed as acted at Plymouth last year. It is, however, an unhealthy sign when exhibitors refuse to go to trial unless they can have everything just their own way. Mr. H. B. Caldwell was absent, and Messrs. Coleman and Kay in office. —*Ed. F. M.*]

THE ARTISTIC FEATURES OF THE ESSEX COTTAGES.

At the annual meeting of the Essex Archæological Society, held at Earl's Colne, the following paper was read by the Rev. E. S. Corrie: "The Artistic Features of the Essex Cottages." This title is far too ambitious for the few remarks I shall be able to make; in fact, I have to apologise for obtruding on you at all, the crude and imperfect thoughts which alone, under the pressure of many engagements, I have been able to put on paper. I only consented to read at all on the repeated request of your secretary, and must crave your kind indulgence while I endeavour briefly to fulfil a promise too rashly made. The title, indeed, is not only too ambitious, but not strictly accurate, as I shall embrace in my remarks not cottages only, but farm-houses, in fact any dwelling-house under the rank of the mansion of the squire or nobleman. *These* have been often well described and illustrated in works easily accessible to all; but the cottages and farm-houses left us by our fathers in past ages have not received the attention which, I think, they deserve. I cannot but think that it would be well worth the while for some one really capable to undertake the subject, and work it out; to illustrate the principles of design which these old houses exhibit; to endeavour to classify them as to date; and to publish careful illustrations of good examples. I have not the knowledge or skill for anything of the sort, and only venture to skim the surface of the subject, and direct the attention of some abler hand towards it. I do not allude now in any way to the *ground* plan of these old homesteads—their arrangement of rooms—their appliances for the comfort and decency of their inhabitants at the time of their erection—or their capabilities for meeting the necessities of our modern life—I speak simply of their external form and design. Nor is it impossible to deny that this is generally one full of beauty throughout the whole of our country. Our poets have sung the beauty and quiet of our English cottages. Travellers from other lands speak of them with unvarying admiration. Painters love to represent their picturesque gables and shadowing eaves and latticed windows and broad chimneys. It is some few features of this beauty we would wish to point out. And first, I would bid you remark how entirely they are designed to harmonise with their particular sites, and with the prevailing features of our quiet English landscape. This implies in their builders a perception of artistic propriety and fitness which is now little understood, and seldom attained by our modern architects even in great works. How often, in these days, do we see a building, placed in a city, crowded up in narrow streets, yet framed on a design requiring it to be seen from a distance, and fitted for some commanding position in the country! On the other hand, we have buildings like the facade of the new Museum of Oxford, fitted for a continuous line of street, standing isolated and alone. Now this fact of apportioning the character of a design, not only to the object of the building, but to the nature of its site, to make it thus appear to belong to the landscape around it, to grow out of it instead of being an extraneous thing, put down, as it were, hap-hazard where it is—this, I say, is a mark of subtile and true artistic feeling. It was possessed in an eminent degree by the builders of old time; it is seen in their *greatest* works. The house of the noble in the city was a different type from that of his mansion in the country. Their *churches* varied according to the nature of the scenery around them and the materials to be used. Some had spires, some towers—the towers themselves varying in form and size, and yet each so exactly suited to their several situations that, to a practised eye and cultivated taste, no small portion of effect could be lost were any two different types interchanged in site. A Pembrokeshire church, with its severe and simple pyramidal tower, would be out of place in the wooded or cultivated plains of Essex. An elaborate tower like that under whose shadow we are sitting, or one of beautiful brick-work like that we shall see at Hedingham, would lose half its beauty among the wild hills and rugged valleys of the West. Now just this very principle which the old architects adopted in these their great works, they successfully imparted even to their smallest. All that we have said of mansions and churches applies equally to their cottages and farms. To a mediæval builder nothing was too small for care. The same air of grace and fitness that marked the mansion of the squire or the noble was thrown around the humbler dwelling of the farmer or the peasant. If one looked grand and noble, with its wide sweep of lawn and far-reaching avenues, the other equally became its knot of shadowing elms, and its little garden by the village green. The one, as well as the other, was fitted for its special site, and seemed equally a part and parcel of the general landscape around. In Herefordshire, we have the homesteads formed with the black beams, showing oftentimes in beautiful and varied patterns through the white plaster between. In Gloucestershire, the rich yellow stone, with stone mullions and quoins, and roof of slabs, give an air of solidity and comfort, fitting the rich gardens and orchards in which they stand. In Wales, the grey cottages, low and nestling in some hollow of the hills, give an air of shelter from the wild winds of the mountains: all these, fit and beautiful in their several positions, we feel would be out of place in Essex, where the long stretch of roof, varied by projecting gables, and covered with thatch or tile, the white walls, with their quaint varieties of pargetting, seem at once the natural outgrowth of our quiet, undulating country, and lend to it one of its greatest charms. I know, indeed, it may be said, all this is merely accidental—that this grace and fitness results simply of itself from the accident of material, or what not. But the objection is a shallow one. Things do not grow of themselves into forms of beauty. To make them do so requires knowledge and thought and skill. Nay, the objection itself only proves the more what we are stating, for it is the very height of art to conceal itself, and appear what actually it is not—the mere natural outgrowth of utility, of necessity, or material. Take another aspect of these homesteads of our county, and observe the fitness with which their mere outward form expresses the kind of life for which they are constructed. There is thrown around them an air of quiet, calm repose—they seem to breathe an atmosphere of simplicity and content, harmonising completely with the quiet, unambitious tenor of a country life. Those, indeed, who know the country best, know that this appearance is but too fallacious—that amid those quiet scenes breathe the same wild human passions: there are the same troubles, miseries, the same wayward errors and sins that beset life everywhere. Yet, as we look upon some country village, we feel the thought of all this runs counter to the outward show of things, and this very feeling of incongruity shows how deep a hold upon our minds have the ideas of peace and repose that the old builders have impressed upon their buildings. Yet a third matter to which I would call your attention in these old domestic buildings is their infinite *variety*. The type, indeed, is the same; there is always the high-pitched roof, the wooden-framed or mullioned windows, the genial stack of brick chimneys, suggesting the warm ingle within. But at the same time there is an almost endless variety. Sometimes the roof is unbroken from end to end, sometimes a central gable breaks its line, sometimes there is a gable at one end of the front, sometimes at both. When several houses are placed in a row, under one roof, the windows are sometimes dormers, sometimes carried up in small gables from the wall, which group beautifully with the larger gables that in that case usually flank one end or the other; sometimes the upper storey projects over the lower, throwing at once a dark mass of shadow that adds greatly to beauty. The walls, as I have already said, though often simply rough-cast, yet often present a great variety of patterns in pargetting, quaint and simple, and eminently constructive in design. All these and other matters we might mention, alone or in combination, produce an infinite change and variety of form, and this alone is enough to claim for them a high artistic excellence. *Sameness of type*, with *individual variety*, is the law of nature's works; it regulates the growth of the trees of the forest, and the leaves of each individual tree; it marks no less these old cottages and homesteads of our native county. This, then, is a high artistic feature—it is more, it is a great moral influence. It tends to gather the affections of the indwellers of these houses around them, to separate them from others, to intensify the idea expressed by our sweet English word *Home*. Contrast these ancient houses with those which we erect to-day. Take an ordinary modern cottage, 4 square brick walls, a door at one side and a window at the other, and two windows above, a slate roof, low in pitch, with no eaves; it is a *dissight*—a blot upon the landscape around it. It is impossible to love a base, mean thing like that. Or, take a modern row of cottages—each one exactly like the others—each a repetition of the type I have distressed you by describing, without a single thing to distinguish it from its neighbours but the number of the door; how can any affectionate associations gather round such a dwelling as this! It seems almost a profanation to apply to it the sacred name of "home." There is certainly nothing in it to attract, and everything to repel. But being constituted as we are, with body as well as spirit, susceptible as is our nature, and especially in its uneducated state, as to external influences, it is, to say the least, unwise to render our homes outwardly unlovely and repelling. Our fathers acted wisely as well as tastefully when they sought to render a man's house itself attractive, to give it an individual peculiarity distinct from any other, and to make it outwardly a fitting type of those fair and gentle influences which should dwell within. Such are a few of the artistic features of an old homestead: it is a poor and meagre outline; but it may serve, I think, at least to call attention to them, and gain for them an interest which they well merit, and which they but seldom excite. The more you really look at them the more you will be struck with their picturesque beauty. They are, moreover, very precious as memorials of the past of our people still existing amongst us, and which if once lost could never be replaced. And it is a fact that they are slowly indeed, but surely, fading away from us. The mere process of inevitable decay must rob us of them in time, and of the oldest and often of the best first; but besides this, every year, in every village, one and another of them is falling before the march of what is called improvement; either altogether pulled down to make room for some vulgar, tasteless erection, deficient in every point in which they excelled, or else mutilated or added to, and all their native beauty destroyed. Now surely it is to be lamented that these buildings should pass away without some record and memorial. If the things themselves must cease from amongst us, surely, at least, their *forms* may be preserved. Now this is the real object I have had in choosing the subject of this paper. I would venture to press upon you the importance and interest of securing some memorial of these old buildings. In every neighbourhood there is some one or other who has the power of making some sort of sketch, however rough. Will it not then be well to keep an eye upon these old buildings? Whenever a house or cottage is to be pulled down, or *improved*, as the term is, let some one or other make it his business to take a sketch of it from one or two different points of view; a simple outline would be enough, just catching its leading features, the distribution of its masses, and the arrangement of its parts. Nay, more—there are many of you in these days who are photographers. I can conceive nothing more interesting than that some one who possesses this valuable art should go round his own particular neighbourhood and take photographs of the best and most picturesque of these ancient homesteads. A collection of such photographs would have an interest and value almost impossible to over-estimate. They would form at once interesting memorials of the past, and be precious guides to our architects for the buildings of the future. We are never likely to have a type of building so fitted for our climate and our scenery as these, and it is surely possible to combine with the increased comforts and greater requirements of modern life these time-honoured forms which add so much of beauty to the hills and plains of our native land.

The CHAIRMAN (Sir T. B. Western), in allusion to Mr. Corrie's suggestion that photographs should be taken of the labourers' cottages and farmers' dwellings and homesteads, as well as the houses of the squires, said he had often regretted that their photographic young ladies, many of whom practised the art exceedingly well, did not go about and take photographs of the old buildings, of which he thought they might obtain an exceedingly interesting collection in Essex.

ON THIN SOWING.

SIR,—Alderman Mechi does good service to the agriculturist in publishing the results of his experiments; and though, as Dan O'Connell expressed it with regard to himself, the Alderman is one of the best-abused men in England, he shows that he does not lose his English pluck in the face of his detractors. His letter in the *Farmer's Magazine* of the last month is another proof of the advantage of thin seeding, and the absurdity of sowing three and four bushels of wheat per acre. The results of his three-years' experiment in sowing of one peck per acre, on the small scale of half an acre, is only following up what Mr. Hallett has been practising on a large one on his Brighton farm; and his persevering in the system for so many years on those fields that can be *sown early*, and regulating the quantity of seed afterwards by the later period in the season, is a pretty good proof that he finds it pays him, for no one who knows him will suspect him of the folly of persevering in a practice that involves a loss. There is not a doubt that seed wheat put in at the rate of a peck per acre in August or September will cover the ground, and produce a larger crop than three bushels in October. Mr. Hallett has reaped from such seeding five, six, and seven quarters of wheat per acre, while his neighbours with their three and four bushels of seed have not reaped more than from three to four, according to the season. Besides the injury the plant sustains from over-crowding, the excess of seed is no small loss to the farmer and the community, which is worth taking into consideration.

Mr. Stephens, in his "Book of the Farm," by a few figures places the absurdity of thick seeding in an almost ludicrous light. The following is the calculation he gives of the practice:—"Wheat of 63lbs. per bushel gives 87 of its seeds to the drachm, or 1,403,136 to the bushel (avoirdupois weight). Now three bushels of seed are sown per acre, or 4,209,408 grains of wheat. Suppose each grain produces a stem, and every stem an ear containing the common quantity of 32 grains, we have 134,701,056 grains, or 1,548,288 drachms, which divided again by the number of drachms (256) to the pound, gives 6,048 pounds, or 96 bushels. But the heaviest crop in Scotland seldom exceeds 64 bushels per acre; so that 32 bushels to the acre or 33 per cent. of the seed is lost on the best crop, and 58 per cent. on an ordinary crop of 48 bushels.

Mr. Stephens follows this up by another calculation:—"Wheat of 4,209,408 grains per acre gives 869 seeds per square yard." This is 96 grains to the square foot. Now, let any farmer plant a foot of ground in his garden with 96 grains of wheat, or one to every 1½ *square inch*, and see what a hand they would make of pushing themselves forward. Fortunately some, and they the weakest, die, and thus the survivors are relieved; but they never recover that strength which we see in thin-sown wheat, nor do they mature the quantity or quality of produce.

The case is the same with barley and oats, except that, with a larger seeding, there is more crowding. Thus: Barley, 4 bushels per acre—4,377,600 grains, which gives 904 per yard; oats, 6 bushels per acre—9,673,728 grains, which gives 1,998 per yard. This allows 100 seeds of barley and 222 of oats per square foot, in which case from 53 to 62½ per cent. of the seed barley, and from three to six-sevenths of the seed oats are thrown away; and worse—for the crowding injures the constitution of those that remain.

I am aware that it is argued, "We must make an allowance for the rooks and other birds, which commit great depredations on the seed corn." This argument would be a valid one if Messrs. Rook and Co. had the discernment and the goodwill to select just those grains that are superfluous and not wanted. But that is not their business. They are freebooters, and take their black-mail without regard to the farmer's interest, as the latter well knows to his cost, if he has neglected to look after them for a day or two. Then, again, they say, "Some will die off after they have come up." There is not a doubt of that; and this is the very question in point. They kill each other with crowding, just as the poor fellows were killed in the Black Hole at Calcutta some eighty or ninety years ago. They have not only not room enough to breathe, for plants, you know, *do* breathe, but they rob each other of the nourishment they require, and the weakest "go by the wall" and die.

Thin seeding is no new thing. Tull practised it a hundred and sixty years ago on a large scale for many years. Had modern science then been known, he would have succeeded better. As it was, he grew better crops on half the acre of ground than his neighbours did on the whole acre. Chateauvieu, following in Tull's track, planted 200 acres annually, and obtained largec crops from one peck of seed per acre than he previously did from three bushels. Miller, the author of the *Gardeners' Dictionary*, advocated it strongly, and says the best crop of wheat he ever saw was produced from a seeding of one peck per acre. He mentions another instance in which a seeding of one peck per acre produced a return of 307 for 1, or 9 qrs. 4 bush. 3 pecks per acre. Many farmers of the present day advocate the principle of thin seeding, but the prejudices of the majority prevent the general practice. I feel persuaded that if it were otherwise, the produce of wheat in the country would be at least one quarter per acre more than at present. It is certainly true, as Alderman Mechi states, that in the early spring a thinly-seeded field has frequently a miserable appearance, if the winter has been severe, the foliage being cut down to the ground; but this is soon over, and an abundance of tillering makes ample amends for the rough usage of the frosts of winter. And in the summer, the well-covered surface and the abundance of ears, standing shoulder to shoulder, without any *under-corn*, tells of itself the advantages of the system,

Yours, &c.,

London,

THE OLD NORFOLK FARMER.

OUR FOREIGN SUPPLIES OF ANIMAL FOOD.

If we have lately been drawing large supplies of live ck and fresh meat from the Continent, we have at the time been also increasing our extraneous supplies of d provisions, dairy products, eggs, and other animal stances used for food. To look into the actual figures those supplies conveys a proximate estimate of the ing wants of our millions of hungry mouths, and tes one by the actual value of the sum thus paid to gners for food necessaries, principally brought into pool, and to what the poet Bloomfield well terms—

> "Provisions' grave, thou ever-craving mart,
> Dependent, huge metropolis!"

importance of a mixed diet is well understood by lasses in this country, and there is no other where rge a quantity of animal food is proportionally med.

find in Europe that those nations who take the animal food are the strongest, and, amongst , it is just in proportion as we give our labourers od, or wages to procure it, that they are stronger ler able to do their work. It is vain, says Dr. ter, to get through intellectual or physical labour t an abundant supply of the material of thought ysical power, and animal food is one of the readiest of affording this supply.

foreign supplies of animal food, imported under oard of Trade aggregate heading of "Provisions," ceeds the annual value of £9,000,000, and this is ive of live animals, fresh meat, poultry and game, and cured fish, and sundry other products which t in value to half as much more.

glance over the statistics of the leading articles of t and consumption shows considerable fluctuations eral. Thus the quantity of bacon and hams we taken annually has been very variable. In 1860 it but 326,000 cwts., but running up gradually to 00 cwts. in 1861, 1,846,000 in 1862, and 1,878,000 3. Then came a decline to about 1,000,000 in to 713,000 in 1865, and a recovery in the first six hs of the present year to 451,744 cwt.

king salt pork next, we find similar extensive fluctuain the quantities. In 1860, we received 173,000 the imports dropped the following year some 50,000 rose again in 1862 to 226,470 cwt., then fell to 00 cwt., recovered in 1864 to 189,400 cwt.; last year bout the same amount, and this year there has been e comparative increase.

salt beef the import trade is more steady, averaging last six years 250,000 cwt., the quantity only varybout 20,000 or 30,000 cwt. a-year. Salt beef and however, are not much used at home, and the de- depends more or less upon the activity of shipping emigration, and the extent of the navy in commission, y are chiefly used for ship's stores.

ncing next at dairy produce, although there has an increased import in foreign butter of 200,000 in the five years since 1860, in the last four years mports have kept pretty steady at about 50,000 tons. e has increased 50 per cent. in the last five or six , and the imports it will be seen keep large. The rts of lard declined one-third between 1860 and , but this year there has been a marked recovery, the ipts reaching 193,000 cwt. for the six months.

In one article of import, eggs, the increased consumption is enormous, having risen steadily from 167½ millions in 1860, to 364 millions last year, and in the first half of the present year the numbers received from abroad exceeded 249 millions. Now, although all these eggs are not fairly referable to food consumption, since a great many are used by photographers, tanners, and others, yet the supply for domestic use is already very considerable, and yearly increasing.

What remarkable figures, however, would be brought out if the aggregate home-consumption of animal-food could be accurately ascertained, and added to these foreign supplies! which form, after all, but a drop in the bucket of the quantity yearly raised on our own soil. The production and consumption of butter, for instance, in the United Kingdom, at the allowance of but 16lbs. a head per year, for two-thirds of the population, would be (say for 20,000,000) about 150,000 tons; which, at the average price all round of 1s. per pound, would give a gross sum of nearly £17,000,000. The consumption of cheese, again, in the kingdom is based upon an estimate of half-an-ounce per diem, or 12lbs. per year, for the same number—equal to 100,000 tons per annum; which, at the low average of 70s. per cwt., gives a gross sum of £7,000,000. We can say nothing definite of the home-production of milk, eggs, and poultry; but with butchers' meat added, the yearly bill for our animal-food for the nation would reach a pretty considerable sum. The following summary will serve at least to show the progress of imports in the leading articles of provisions for which we are indebted to foreign countries, and may prove useful for reference. The quantities are given in cwts.:

	1850.	1860.	1865.
Bacon and hams ...	352,462	326,106	713,346
Salt pork	210,948	173,009	183,155
Salt beef	123,662	261,259	228,296
Butter	330,579	840,112	1,083,717
Cheese	347,803	583,283	853,277
Lard	—	198,030	136,898
Eggs (millions)	105,689	167,695	364,013

That in the last item of import named—eggs—we should pay nearly a million a-year to foreigners for our supplies is a proof that there is ample room for our cottagers, in Ireland, Scotland, and Wales, to look to the increase of this simple but profitable item of industry.

PIGS.—The number of pigs maintained on each 1,000 acres in each English county was computed in March, 1866, as follows: Surrey (extra metropolitan), 63; Kent (extra metropolitan), 68; Sussex, 46; Hampshire, 75; Berkshire, 91; Hertfordshire (extra metropolitan), 90; Buckinghamshire, 84; Oxfordshire, 90; Northamptonshire, 61; Huntingdonshire, 116; Bedfordshire, 124; Cambridgeshire, 111; Essex (extra metropolitan), 99; Suffolk, 141; Norfolk, 86; Wiltshire, 71; Dorsetshire, 61; Devonshire, 57; Cornwall, 73; Somersetshire 72; Gloucestershire 63; Herefordshire, 47; Shropshire, 72; Staffordshire, 66; Worcestershire, 78; Warwickshire, 65; Leicestershire, 45; Rutlandshire, 39; Lincolnshire, 52; Nottinghamshire, 55; Derbyshire, 48; Cheshire, 82; Lancashire, 41; the West Riding of Yorkshire, 42; the East Riding of Yorkshire, 68; the North Riding of Yorkshire, 40; Durham, 23; Northumberland, 20; Cumberland, 41; and Westmoreland, 15. Suffolk would thus appear to be the English county which has the most relatively dense porcine population, while the thinnest proportion of pigs would seem to be found in Westmoreland.

A BOARD OF AGRICULTURE.

"In America the farmers have a department in connection with Government. They have a meeting of that department monthly; and it is astonishing how easily and correctly they can obtain the agricultural statistics of the whole of the United States. In France they have a Minister of Agriculture. In other countries of Europe also agriculture has a standing in connection with Government. In this country we have only a Board of Trade. It ought to be called a *Board of Trade and Agriculture*." So said Mr. Holland, M.P., at a meeting held last week in Gloucester, when urging more systematic action on the part of the farmers in maintaining their own rights and interests. And so have we continued to say for some time past, although we should be prepared to go further than Mr. Holland, and ask for the establishment of an entirely distinct Board of Agriculture, in no way associated in its conduct with any other department. There is, moreover, no time like the present; for, with the Country Party in power, such a feature might be reasonably accepted as a part of the Ministerial programme, even without the incentive of any outside pressure. There is no doubt but that the claims of Agriculture require more attention than they are now receiving from the Government, where any question touching upon rural matters is too apt to be treated pretty much upon the principle that "everybody's business is nobody's business." The heads of the Home Office or of the Board of Trade have really not the time to study such subjects, which are bandied about from one to another until they can be conveniently dropped or shelved to some more "fitting" opportunity. We should be coming, however, to a better understanding with our rulers, as there is some satisfactory evidence of this feeling already apparent. In a letter which Mr. Albert Pell, of Northampton, has just published, he states that he "turned to the Royal Agricultural Society to lead, but found that the laws contained in their Charter, which cannot at any time be altered or departed from, precluded the Society from taking part in any questions of a political tendency, or having reference to measures pending, or to be brought before Parliament." Mr. Pell will be rejoiced to learn that the laws of the Royal Agricultural Society can be altered, and that a Committee is sitting at this very time with the object of striking out from the conditions of the Charter those clauses which "preclude the society from taking part in any questions of a political tendency, or having reference to measures pending, or to be brought before Parliament." With, then, this objectionable proviso removed, as no doubt it will be, the Royal Agricultural Society of England should be the agent through which, of all others, the formation of a Board of Agriculture might be brought about. And this is all the more probable when we bear in mind that the reconstruction of the Council has also been determined upon. The mere drones and obstructives are to be removed, and at least a fair half of the members of the direction to be taken from the tenant-farmers of the country. Here, then, we repeat, with the working machinery already supplied—with men of becoming position and influence identified with the Executive—the way from Hanover Square to Downing-street should be easy enough to find. It will remain very much with the farmers themselves to determine whether or when such a course shall be taken. If they split up into little parties, if, in a word, they agree to divide their own strength, the old fable of the bundle of sticks will be the moral their story. It has always, and naturally, been a matt of difficulty to get agriculturists together; but there tried men who have for long sacrificed their time their money to the interests of the cause, as with th we should infinitely prefer still leaving the lead.

In a movement now going on in certain parts of t country, but the necessity for which we can scarcely cognize with the institutions already in force, some m startling announcements have been made. In Shrop for instance, Mr. More, the new member, declard, far as we remember his words, that the farmers never as yet been permitted at their mee to touch on Farmers' Politics! Such a statement serves to show how little the honourable member re knows of the topic he is talking to, or of the great b of those he has been elected to represent. Within last fifteen years or so, there has not been a question be ing upon the politics of Agriculture but that has been cussed over and over again at our leading Farmers' C and similar societies; whilst many of these matters h been brought under the attention of the Governm through deputations to the chiefs of Departments, committees appointed to take evidence, or by debate the House, where the opinions of these outside assem have been quoted with the most marked effect. Mr. again, in his letter, writes with ingenuous simplicity of evils of the malt-tax, as if he had really struck out a idea when he argues in this wise: "The malt-tax pre with undue severity on the out-of-doors labourer, to wh good and cheap beer is as much a necessary as meat. farmer has all the material at hand for producing th Barley he grows; hops are English produce; water, fu cellarage, and space for the manufacture exist on m farms; but he cannot turn these to the best advanta owing to a duty that is almost prohibitory. Home-brew ale and clean small-beer belong, for the poor at least, village tales and romances. The real thing is gigan fortunes made on the banks of the Trent and Thame farmers sipping sherry and Gladstone-claret; and th labourers with their chins to the pump-spout by day, their noses to the 'public' quart pot at night. With this, to crown the mischief we are cursed with an abomi able licensing system, that does more to demoralize th thoughtless and improvident than can be well conceived. This is all very well put, but there is not a reader of ou Paper but that knows it all by heart. The right of Englishman to make the most of his produce, the clai of the labourer, and the abominations of the beer-sho have been discussed by the farmers and represented to th Government any time you please for the last twenty yea or more. The grievance has indeed been worked and we worked through organs especially started for and confine to this object, and we are not sanguine of seeing any mo effective movement than that made here, there, and every where by the Anti-Malt-tax Associations. Mr. Pell equally startling in his onslaught against the evils arisin from the over-preservation of game, where he taps new lode after this fashion: "Then the destruction human food, arising from the stocking cultivated land wit ground game, is a fair question for examination; and if can be shown that the preservation of hares and rabbit is incompatible with good husbandry, representations that effect might be urged with the view of removin them from the game list. Certainly the preservation them, out of the woodlands, for letting or selling, or for keepers' perquisites, is a practice productive of ill-will, poor crops, inferior tenant farmers, and poaching labourers. To my mind recent legislation on this head has pointed in the wrong direction. The old laws prohibiting the sale of game, and limiting the pursuit of it to qualified persons only, placed the cultivator of the soil in a better position than he now finds himself in." As if the ground game had not been a fair question for examination for years past! Indeed we had hoped to have gone far beyond any such implied *question* of examination! As if it cannot, or rather as if it had not been shown that the curse of hares and rabbits is incompatible with good husndry! As if representations had not been made, and as some reform had not followed! As if treating the rabbits the perquisites of the keeper had not been denounced over d over again, and the remedy of permitting the farmer destroy them in any way he chose as strongly recomnded! There is ample evidence, moreover, that such vice has not been without its results; and only within e last week the following paragraph has been going the nds of the papers:—

"At the meeting of the Fettercairn Farmers' Club, as last week, the president, the Earl of Kintore, made important communication in regard to the game question. His lordship deprecated any further Parliamentary interference between landlord and tenant, and said that all that is required may be best arranged by mutual agreement between the parties themselves. Lord Kintore announced his intention of issuing a circular to his own tenants, empowering them to shoot rabbits, 'the pest of the farmer and the pest of the landlord,' on their own farms. In addition to this, he said that he means to give his tenantry permission to shoot hares either by their own hands or by such deputies as he may approve of. His lordship added that he was quite sure that, in return for this concession, his tenants would preserve for him and his friends the feathered game on their land."

This is a way of meeting the difficulty, the mutual advantage of which we have maintained for many years past, and that we still believe has done, and will do more good than even Mr. Pell's proposed return to the old game laws. Still, we have thought it only right to give some expression to this gentleman's sentiments, and all the more so as he appears by no means inclined to allow any credit whatever to the efforts of those who have preceded him in the field, but, with the most amusing self-satisfaction, reads the old story backwards, and boldly offers his old lamps for new!

THE PROPER MANAGEMENT OF THE FLAX CROP.

At a meeting of the Ballymahon Farmers' Club, on the h of August, Captain King Harman in the chair, the llowing paper, "On the Proper Management of the Flax op," was read:

This subject has of late received much attention from agriltural societies and the Government of the country. Great aise is due to the Royal Agricultural Society for the manner which it has endeavoured to advance the growth and cirlate the knowledge necessary for the proper management of is crop. That the flax crop, when properly manipulated, is e of the most remunerative to the farmers has been clearly roved by experienced growers in Ulster, from reports of its ccess in many parts of the south and west, and also from the cent experience of some farmers in the neighbourhood of oyvore. Now that the population of the country has been much decreased by emigration—the labouring classes seekg higher wages and better treatment in other countries—the bject of suitable employment for women, girls, and boys, who ve hitherto, in many parts of the country, had comparatively ttle employment, should occupy the attention of agricultural cieties, especially in the south and west of Ireland. The ulture of the flax crop gives a large amount of work to these classes, thus adding a strong inducement to their husbands and rothers to remain at home. We think it worthy the attention of patriotic farmers, who wish to benefit the locality in which they reside, to cultivate the crop, provided it will pay, that will give the greatest amount of employment to the labouring classes. We don't believe that the Great Supreme Being ever designed a noble country like our own merely to rear and fatten cattle, to the extermination of human beings; and the system of large grass farms—a system which was at one time the fall of the Western Empire—may, ultimately, prove the ruin of Ireland. That system has been so extended throughout the country of late, and the farmers generally so anxious to obtain large grass farms, that working men have no other alternative than leave the country to seek a home in other lands. We don't agree with the opinions recently propounded by some writers on the cultivation of the flax crop, that it would be a cure for Ireland's evils, whatever these may be; but we affirm that the growth of it would give much suitable employment to those who are generally the most destitute in society. To grow this crop with success, knowledge is necessary; and as in all agricultural pursuits, knowledge is not only power, but money, so in the production of this crop especially it is both power and money. The soil and climate of Ireland are peculiarly well adapted to the growth of this crop; and if it be managed with knowledge and energy, it will not fail to remunerate the employed and the employer. Every species of soil except bog will produce flax, and even bog with a good clay bottom; but that which produces the heaviest crops is the deep loam or the heavy clay. The land in cultivation best suited for it is the first crop after lea oats, wheat, or fallow; but poor soils not previously growing it, where properly cleaned of weeds, may produce good crops. We do not by any means recommend lea ground in this country for flax, as the experiment has been tried and failed. It is too difficult to close the ground, and the drought penetrates, to the great injury of the crop. If the month of May was wet, or a dropping month, we have no doubt but lea would produce a good crop; but we would not risk its uncertainty. There is an opinion prevalent amongst many that flax is a scourging crop; but those who understand the nature of flax know from experience that such an opinion is erroneous. A member of this club in the neighbourhood of Ballymore sowed, three years ago, an acre of poor fallow: he had ninety-five stones to the acre, sowed it in grass and clover along with the flax, took two good crops of meadow, and this year has a capital crop of oats, all without manure. This fact speaks for itself. The land should be ploughed deep in the autumn, and kept dry during the winter. If it be not well drained, surface-drains should be made, that the top water may easily get away, and then cross-ploughed in the end of February or beginning of March, so that weeds may get time to spring before sowing. When the time of sowing comes, the land should be well harrowed, and the surface made very fine, free of all weeds and large stones. The more harrowing the better, to close the ground well, so as to keep the subsoil damp, and for this purpose the land should be harrowed and closed before the penetrating March winds. The reason for deep ploughing the first time is, because the flax root has been found to penetrate to a considerable distance into the subsoil; and thus the deeper the tillage and the more moist the subsoil, provided it has been well drained, the better for the crop. The heaviest crops have been produced from lands that have been subsoiled for the previous crop; but for this crop we do not recommend subsoiling, as the land could not be brought to the proper tilth, and as the newly turned-up earth had not been long enough exposed to the fertilizing influence of the rain, sun, and atmosphere. The second ploughing should not be deeper than four or five inches, so that the winter surface may be preserved for the seed. That surface, in consequence of the winter rains and atmospheric influence, has been rendered peculiarly suited for the reception of the seed. If potato ground be sown in flax which has been cultivated in ridges, the ground should be well levelled and freed of all weeds when the potatoes are being taken up, and the surface that is exposed to the winter fruits should receive the seed without any ploughing at all. Harrow deeply and make the surface fine; then sow the seed and roll with a heavy roller. Ridge potato ground is much better for this crop than drills, as it is much more difficult to get the manure evenly scattered in the latter than in the former. The proper time for sowing is the month of April, and as early as possible in that month, weather being favourable. It is not wise to sow in frosts, and such must be evaded, if possible, especially if the land be not very dry. If the seed can be sown immediately before rain it will ensure an even crop, which the farmer will find to be much to his advantage in the return he will have from the mill. An after-growth crop is always unprofitable, but that which makes regular progress from the time that it appears above the ground is the one that always remunerates the grower. Early sowing, whilst it requires a little more seed, is ready to catch the early rains of spring, and as flax is fond of water, a greater crop, with a better fibre, may be expected. Great care should be taken in the selection of seed, and farmers should always purchase from the best houses, and secure brands that have been well tested. Riga seed is better adapted to light and loamy soils, while Dutch may be sown with greater advantage on heavy clay soils. The best Riga brands are Schroder's and Jacob's, with many others of good reputation; and the most popular Dutch brands are the M.B.M.'s, or C. and M. We would always recommend, although it may be a little higher, the extra-picked of the Riga, and the M.B.M.'s of the Dutch; but growers will soon learn to know the best seed. That which is clear in the colour, plump, and full, is the best; but whatever is dark or greenish in colour, without plumpness or fulness, is bad, and will disappoint the grower. English seed has been sown to a considerable extent in many parts of Ulster, and has been found to do well if obtained from the first crop after importation from Russia, but it is not so certain as the Riga; and Dutch home-saved seed has been found in many instances to grow well, but we would not recommend farmers to try the experiment, unless a very superior sample could be obtained—and such samples are rare, in consequence of the difficulty of saving it with our humid climate; and whilst it may grow as well as the imported seed, it will not give as good a fibre. The quantity of seed which is generally put to the Irish acre is one Riga barrel, or fourteen pecks; and the same proportion of Dutch or English. The more slippery the seed in the hand the better, as it is a sign that it is full of oil; and when the sower complains that he cannot hold it in his hand, the better prospect, the season being favourable, of a good crop. The seed, if sown too thin, will grow coarse, strong, and branchy, which is sure to be cut away in the mill in the branching parts; and if sown too thick, will grow short and fine, with a very delicate fibre. When the flax crop appears above-ground it should be hoed, if any weeds arise; and by the time that it is six or eight inches long it should be left perfectly clean. The boys and girls should weed with bare feet, and their faces turned towards the wind, that the trodden-down flax may be blown up as soon as possible again. As the crop takes about three months in the ground, care should be taken not to pull it too soon, as the fibre, although a little finer, will be delicate, more difficult to manage properly, so as to keep strength, and will go to waste in the mill; while, on the contrary, if it is permitted to be too ripe, it will be coarse and husky, and will not give the price. The proper time for pulling is when the crop changes from a green to a yellow hue, when the stalks begin to strip of their leaves about half-way from the root, and the seed turns from a pulp to be firm and hard, with a tinge off brown. If the crop be heavy and the weather wet, it must be pulled greener, to save it from injury. Also, if it fires—which is a hard black rust on the stalks—or, as they say in some parts of Ulster, if it ticks, it must be pulled at once.

We recommend, where such can be done, rippling; and if that is properly managed, the flax will not sustain any injury. For feeding purposes the bolls are very valuable, either for pigs, young stock, or stall-feeding. Farmers accustomed to stall-feed appreciate very much the oilcake; but bolls are much more valuable for feeding purposes, as they contain all the oil which has been extracted from the oilcake. When the pullers begin to pull for rippling, they should leave the handfuls across each other. The ripple is tied in a cart; and a small rut is made with the spade for the wheels to sink into, so as to bring the cart so low that the ripplers can stand with ease at their work. One man stands behind and another before the cart, at the same ripple. These men take the handfuls of flax, spreading the top of it in the hands, draw it through the ripple with a sudden jerk, then turn the hand, giving it a second pull through the ripple; and thus it is done. A little boy carries in the flax, and a woman or girl ties it up. In this way the ripplers proceed, always moving the cart, so as to keep near the pullers, and save the trouble of carrying the flax from a great distance. Care should be taken, when pulling, to keep the root-ends of the sheaf as even as a brush; for the more even it is kept, it will sell the better, as there will be little loss to the buyer in the hackling process. If the weather is dry and sunny, the bolls should be laid in an open place, and kept frequently turned, to prevent them from heating. If there be a large quantity of them, a man should be kept always turning them; and in the course of three or four days they will be fit to be removed to a loft, where as much air as possible should be admitted, with frequent turning. If the weather be wet, they should be taken at once to the kiln, and dried with a very slow fire, so that there may not be a stronger heat than a very hot sun. In this way the seed will get time to imbibe the juice out of the husk, and a good feeding material prepared for cattle, although not so good as if they had been dried in the sun. The flax, after being rippled, should be taken to the steep. It should not be permitted to stand longer in the field than the second day, at furthest; and in no instance should it be pulled and stooked to prepare for rippling, as the fibre becomes too ripe and coarse, so that by no process of watering and grassing will it be brought to the same refinement. The best steeps are those with a good blue-clay bottom, made from eight to twelve feet wide, in an open place, that they may catch all the sun. The water should be soft, rain or river-water being the softest. The steep should be filled some three weeks before use, so as to expose the water in a stagnant state to the action of the atmosphere and the softening influence of the sun. The water in the steep should be three-and-a-half to four feet deep; and when the flax is put into the pond, no fresh water should be admitted, lest fermentation be prevented. Flax should not be steeped in a bog, unless there be a good clay bottom; but if there be such, it may be steeped with safety. The flax should be laid in with the tops up, in a slanting position, with the tops of one sheaf at the root-end of the other. It should not be laid too thick, as that would prevent it rising in the pond during fermentation; and it is always well to see it rise during that process, when some additional weights should be placed on it, and afterwards removed, when fermentation ceases, lest the weight should sink the flax to the bottom. The pond should contain a good many dams, and each dam filled with flax at the same time, for convenience in bringing it out. When carefully placed in the pond, it should be covered with sods or round and flat stones; but in no instance should sharp stones be thrown on it, as they cut the fibre; neither should sods and stones be mixed, for where the stones are, the rays of the sun will penetrate more freely, and the flax will water more quickly than where the sods are. It should be all sods or all stones, but not a mixture. Some growers have adopted long poles attached to each end of the dam, and placed a little under the water. From eight to twenty days is generally the time taken in the steep, according to the softness of the water and the heat of the sun. If the water be soft and the weather hot, from eight to ten days is about the average time; but if the weather be cold, the nights long, and the water hard, it will require from sixteen to twenty days to water it properly. Another advantage from early sowing is, that the nights are much shorter, and there is a greater length of up-sun upon the steeps than when the season is further advanced and the weather colder. The more speedy flax waters, the stronger and better the fibre. Flax should get a sufficiency of water, as it is this process in the clay steep with soft water that turns out the silky fibre, provided it has been pulled in the proper time. When fermentation ceases, the flax will sink in the pond, and too much watchfulness cannot be exercised, lest it might be overdone, which would cause a great loss at the mill, and weaken the fibre. Whilst we advocate a sufficiency of water, care must be taken to keep the fibre strong, as a delicate fibre would not stand the hackle. The flax is properly watered when on a sheaf being taken from the middle of the pond, and a stalk extracted out of the heart of it—when broken about six inches apart—about the centre the woody part pulls out freely without any of the fibre adhering to it. In trying it in this way the woody part should be pulled downwards to the root end of it; pull two inches, instead of six; then keep it another night in the water, and repeat the same process the next day until six inches of the wood comes away freely; then take it out of the pond at once. In taking it up, forks and drags should not be used, for the fibre is then easily leaving the wood, and any sharp instrument used then will do it a serious injury. Moreover, when the flax is put in the carts to be drawn to the spread, and when the carts are being emptied, boys or men should not be allowed to leap up upon the flax, and stand upon it, with nails in their shoes, to tear the delicate fibre from the wood. The man emptying the cart should stand in front, immediately behind the horse, and lift the sheaves, scattering them properly in the field for spreading. If the flax should happen to be near watered on Saturday, then take it out and put it in a large heap, called the rot-heap, the one sheaf placed upon the top of the other; let it remain in this way until Monday, when it will be sufficiently done. If it be fully done on a Saturday, or on any other day when you cannot get the spreaders at it on the following day, take it out of the pond, setting the sheaves on their root ends, the one against the other: the wind will then pass freely through it, and thus it will be kept from injury until it is spread. Open, short pasture is the best place to spread on, with all the weeds removed from it. Newly-mown meadows will do well, but where the aftergrass is springing fast much injury will be done to the flax when it grows through it. The flax should be spread thin and even, with the tops northwards, and one row should slightly overlap another, to prevent the wind from scattering it. The winds at the season of the year generally blow from the south or west, and when spread as we have said they will blow over it without injury. We omitted in the proper place to give a reason for placing the tops of the flax up in the pond. It is more difficult to water properly the top end of the flax than the root end, and the top is more delicate. As the heat of the sun is greater at the top of the pond than at the bottom, and as the surface-water is always the softer and the hotter, the top is put up, that it may catch the heat of the sun. From eight to ten days will be sufficient to keep the flax on the grass; but if the weather be wet, from six to eight days will be enough if properly watered, as flax grasses more quickly in wet or showery weather than in dry. When it begins to strip and leave the woody part it is time to take it up, but care should be taken not to lift too soon, as the fibre will not be so well refined. Great loss in price and quantity has been sustained from imperfect watering and long grassing; and the sooner that system is abandoned the better, because it always brings disappointment to the growers. When it is ready to be lifted, it should be taken up at once, without waiting for dry weather. If the weather is wet, it should be tied near the top, and placed on its end, with the roots widely separated, that the wind may blow freely through, and four or five bundles should be placed beside each other, and kept in this way until it is perfectly dry. When well dried, it should be immediately stacked, if not taken to the mill, in round thin stacks; and in putting up these the heart should always be kept well filled, with the root ends of the flax inclining downwards, so as to turn off the rain. If let stand in stack for two or three months it improves much in quality. The stacks should be immediately thatched, and if straw or whin rushes cannot be obtained, it may be thatched with itself without injury. We advise caution in the spreading, so as to have only one colour. Thick spreading will make different colours, which buyers do not like. Some growers turn it on the grass; but, since labour is so scarce and high, we do not consider that process necessary, if thinly spread at first. The first mills should be obtained, and growers in this country should not expose their flax to untrained hands, no matter how good the machinery be. Always, for some years to come, select that mill that is under the management of trained hands from Ulster, until the men in this country become well trained. A farmer may have a good, well-managed crop, and yet, through unskilled labour in the dressing, have it torn to pieces and reduced to tow. The flax may be safely sold by sending it to any of the respectable commission houses in Belfast, and the cost of sending will not be more than 2d. per stone.

THE PROFITABLE APPLICATION OF FARM-YARD MANURE.

The annual meeting of the Galashiels Farmers' Club was held in the Commercial Hotel, on Tuesday, August 7th—Mr. Scott, Mossilee, in the Chair.

Mr. **Adam Thomson** said: Not being a practical farmer, I must crave your indulgence, and hope that you will allow me considerable latitude. It may not be uninteresting to take a rapid retrospect of farming for the last thirty or forty years, and endeavour to discover if we have arrived at that point in agricultural perfection beyond which no improvements can be made. We are all too apt to rest satisfied with the past. We hold firmly to the practical realisation of theories wrought out, and their utility established; but we are often too slow in adopting other theories that might as easily be practically developed. All parties in the community partake of this caution, and farmers, like other men, are not free from its influence. They prefer the good old ways—the ways of the past—fully as much as the ways of the present. Once into the rut, we are content to travel in it, or, like the waggoner, pray the gods to help us out, instead of helping ourselves. This old, antiquated system of clinging to the past has been particularly injurious to the agricultural interest. It was remarkably prominent forty or fifty years ago. Farmers then had little notion of progress. From the want of general information, they were spell-bound by the unbroken chain of the dull routine of the past. The education of a people does even more than the love of money for promoting or retarding the progress of agriculture. Although Adam Smith had produced "The Wealth of Nations," and James Watt had established the utility and power of the steam-engine more than fifty years before, yet scientific knowledge of any kind was almost unknown in rural districts. Farm implements were few, and of the roughest and rudest description. The country joiner could make a wooden plough, with very short stilts and a long beam, a cart, and a wheel-barrow; and a country blacksmith could shoe a horse, make and sharp the plough irons; and there the scientific acquirements of both ended. The farmer then neither read nor studied scientific works. To the great majority of country people, science was only science (falsely so called), and the teaching received made men believe that the less they knew of it the better. The prejudices and superstitions of the people of Scotland then, as the prejudices of the people of Spain and Ireland now, did much to retard the progress of agriculture. Farmers then never thought of attributing anything to their own want of skill or want of improvement. If they had a good or a superabundant crop, it was attributed to Divine Providence; and if they, from want of manuring or proper cultivation, had a bad or stinted crop, it was attributed to the same cause. The light of science, however, has now broken in upon the farmer. Their minds are no longer warped by the prejudices and superstitions of the past. They read scientific books and study scientific subjects. They believe farming progress to be a thing of the future as well as a thing of the past. They know that to move on in the old rut is to move on the road to ruin: to strike boldly out in the path of progress is the path to happiness, wealth, and honour. The progress that has been made in agriculture during the last fifty years has been immense. Fifty years ago, progress was the exception, not the rule. Then nothing horrified the mind of the farmer so much as the idea of breaking up new land. They boldly and resolutely set themselves against all innovations in the breaking up and reclaiming line. They firmly maintained that it was impossible for sheep and cattle to live without old pasture, however bare and stinted it might be. Fifty years ago, if any one had proposed to plough the hill sides that are now under cultivation, ninety-nine farmers out of every hundred would have pronounced it a thing impossible, as they were so steep that sheep could scarcely feed there. Talk, then, of reclaiming meadow land, however rich and verdant, and you would have been told that it was so soft and wet that an ox could not browse there. Talk of reclaiming a barren moor, and you would have been told that ruin would have been the result, as it would not feed a sheep to the acre. But the ploughman, with his team, has successfully scaled the hill side, the stone and tile drains have successfully dried the meadow, and a liberal application of hot lime has so pulverised the barren moor, that upon one and all of them may be seen in the autumn crops of golden grain. Fifty years ago we had no uniform system of drainage, neither regarding depth of drains nor width apart. Drains then were dug in the most crooked and serpentine forms imaginable. No one thought of drying the subsoil by a uniform system of drainage running parallel with the rigs. Tile drains were then unknown, and drains, where stones could not readily be had, were not unfrequently filled with hard turf and branches of trees, which practically undid the work of the drainer. The sciences of geology and chemistry have thrown such a flood of light upon the path of the farmer that he no longer needs grope his way in the dark. Geology will teach him the nature of the soil, the subsoil, and the foundation upon which these rest. Chemistry, that most useful of all the sciences, which reduces everything to its natural element, teaches the farmer the component parts of every plant he grows, thereby enabling him with mathematical precision to apply those elements to the soils that tend to the greatest degree in bringing to maturity the cereal or vegetables desired. Farming, as far as the action of the farmer is concerned, may be conducted upon scientific principles as finely and timely as any other branch of industry in the country. Has chemistry, then, unlocked all its secrets, disclosed all its mysteries, unfolded all its treasures? Has the knowledge of the past and present not, rather, to be expanded into a golden harvest of more enlightened ideas and more enlightened agricultural progress? Are we to rest satisfied with the attainments of the past, instead of developing them into progress for the future? Is our scientific progress so complete that we cannot make two blades of grass to grow where only one grows at present, or rear, feed, and bring to the market four sheep instead of three? Chemistry has done much; but it has not done all. It has treated largely and well upon solid manures, both of the farm and artificial manures; and if farmers are honestly treated by manure dealers, according to the analysis given, the intelligent farmer who sows his crops with these might calculate upon them coming up to his expectations. But I am firmly convinced that chemistry will yet do as much for the farmer in treating of liquid manures as it has already done in treating of solids. I believe that the time will soon come when the chemist will prove to demonstration that every ton of liquid manure from a farmyard (and who can calculate the millions of tons thus lost per annum?) without being applied to the soil, is a clear loss of so many cwts. of vegetable produce to the country. The application of liquid manure to the soil is nothing new, but its application has never been general. It is too often the case that we pass by that which is inexpensive and within our reach, in search of something that is expensive, and, which is often worse, useless. There are but three great sources of wealth in the world—the sea, the soil, and the mine; and, although the products of these may be wrought into a thousand forms, and made the channels of wealth, yet we cannot increase the source from which they come. The treasure of the mine we are told, as far as coal is concerned, will soon be exhausted; and it is of the last importance that we do not exhaust the productiveness of the soil. You cannot possibly put into the soil more than what comes out of it, or, at all events, no mineral manure can successfully replace vegetable. As the depôts of our best guano fields get worn out, more care and more thought ought to be expended in preserving and applying to the soil those vegetable and liquid manures that flow from all our large towns and cities, polluting our silver streams and pellucid rivers, making their waters unfit for the use either of man or beast. The application of solid and liquid manures to the soil is very different. Solid manures require a considerable time and a combination of circumstances to develop them before they can become productive, and act as food for plants. Solid manures lie where they are laid, and it is only by chance or accident that the roots of cereals find them. On the other hand, liquid manure, as soon as applied, permeates the whole. It seeks the plant as readily as the plant seeks it. It is cereal food ready prepared, so that it can at once be taken into the system and be digested. It is difficult to tell what amount of blood the plant receives from the atmosphere, what from rain, and what from the soil. Some plants feed largely from the leaves and stems, while others appear to be supplied mostly by the roots. Some people imagine that the strong roots of plants are capable of imbibing solids; and they conclude that the more dung or the more guano they apply, the more abundant will be their crop. The productiveness of a large application of either manure is entirely circumstantial. If the season is moist and humid, the crop will be large and productive; if very dry their effect will scarcely be appreciable. As I have already said, plants cannot imbibe solids; and, although you should sow your seeds or set your plants on a dunghill, or in a bag of guano, without water they would never come to perfection. The arrangements of nature are everywhere admirably adapted to the condition of plants. The strong roots are thrown out to give them a firm hold of the fibres called spongioles, which by capillary action absorb liquids that come in contact with them, and thereby feed the plants. From the above, you may suppose that I think there is no benefit to be derived from solid manures. Such is not the case; but solid manures can only become available for feeding plants when their constituent parts become so liquefied that they can be easily imbibed by these small tissues, and converted into food for the plant. What gives dung from the cattle-shed a superiority over, and a greater money value than, dung from the stable yard? Their constituent elements are the same or nearly so. But there is evidently a difference in the process of mastication and digestion. The one is light and porous, the other solid and heavy. The superiority of cattle-shed dung consists not only in its power of absorbing moisture, but in its power of retaining it. It gives off the liquid it contains slowly and gradually, so that the plant in contact with it is fed from day to day; and, even in a very dry season, plants planted with the one kind will grow and come to maturity, while with the other they will languish and die, which in my estimation proves to a demonstration that the nearer we can assimilate the food of plants to their hourly wants the more certain will we be of an abundant crop. This is one of the problems that chemistry has yet to solve, how we can produce the greatest amount of human food with the smallest amount of manure, and how that manure can be applied with the smallest amount of waste or loss to the farmer. Farmers and landlords are to a great extent responsible for the food of the people. The greater the amount of food produced in the country, the greater will be the amount of our prosperity; and the greater our prosperity, the more happiness, and the more happiness, the greater will be the security of life and property. Therefore, whatever tends to diminish the people's food, tends to increase the farmer: hence the propriety of allowing no productive matter to run to waste; and yet it is a melancholy fact, that while our farmers are paying hundreds of thousands of pounds per annum for guano and other artificial manures, they are allowing hundreds of thousands of pounds' worth of liquid manure to run waste. For topdressing, there is nothing equal to liquid manure, and it may be applied with propriety, and certainly both to old and young grasses. The extreme price of cattle and sheep that has existed for some time past ought to induce the farmer to do all that lies in his power to increase the productiveness of the soil; and, as liquid manuring is the best thing calculated to produce an early and abundant supply of young grass, it ought not to be neglected. Every market gardener and gentleman's gardener knows the value of liquid manures; and if the application of liquid manures produce early vegetables for our markets, why not produce early grass for our ewes and lambs? Early grass is one of the great desiderata in stock breeding, and I think that by a liberal application of liquid manure that desideratum will be supplied. One of the great, or perhaps the greatest, advantages of liquid manuring is, that you may apply dung any season of the year. From the beginning of October till the end of April there is a considerable amount of liquid manures about all farmyards; and if there were large waterproof tanks erected in connection with these, a supply might be had for seven months in the year. On old pasture land, where there is often more fog than grass, it would be a great advantage to commence watering in the end of autumn, and repeat it as often as possible up till the beginning of spring. The action of the liquid would I believe tend to relieve the fog and produce a fine early grass. But I am further convinced that it may be profitably applied to the sowing of turnips as well as top-dressing grass. By applying it to the turnip land either during the winter or early in spring, I feel confident that the result will be equal to the best guano. In fact I think the results of guano more imaginative than real. It is frequently applied to new land, where no manure is required, and is no test of its capabilities for producing a crop. I am confirmed in this opinion from the experiments made by Mr. Haldane, Fairnilee, when there were only about 15 cwt. of turnips sown with the best guano over the same acreage sown with no guano at all, a difference in money-value of from 5s. to 7s. 6d. per acre. A square acre of land, allowing 2 feet apart from the drills and 6 inches apart for the plants, will produce somewhere about 43,500 turnips. Now, if we allow 5 cwt. of guano as a fair average to the acre, that gives about two-thirds of a quarter of an ounce to the turnip—a quantity so infinitely small that no one can expect it to produce a crop, even admitting that it was all productive matter. But we must deduct at least half that amount for sand and other non-productive matter, which would reduce the quantity to about one-third of a quarter of an ounce of guano to the turnip, a quantity less than an ordinary snuffer would take at a time, of a pinch of snuff; and this is the quantity farmers imagine raises a crop of turnips. As far as my own experience goes, which is confined to pot-plants and garden culture, and as far as the experience of practical gardeners goes, I am convinced that liquid manure, undiluted from the cattle-shed, contains as much real productive matter, weight for weight, as most guanos, and infinitely more than many of the so-called artificial manures in the market. Perhaps, in a country like ours, where we have more acres than men, we can afford to be careless about productive matter; but in some other countries—China for instance, where they have a large population living on water as well as land to support—they require to be more careful. In China travellers inform us that every drop of liquid manure is carefully preserved and applied to the soil. There, farmers who have lands adjoining the highway are in the habit of placing casks or jars at intervals along the roads, for the use of travellers, the contents of which are taken away and carefully applied to the land. Farmers nowhere spend their labour uselessly, if they can help it; and the fact of the Chinese farmer being so careful in preserving it, is the best proof that can be given of the utility of its application. Should you ask me for further proof of the profitable application of liquid manure to the soil, I might point you to the Craigentinny meadows at Edinburgh, the meadow-lands at Carlisle, and part of the Maplin Sands, as watered by the sewage of London. Of course, you may say there is no comparison between the capabilities of a farmyard and the sewage of a city. I admit it; but it is the principle, not the quality, I am contending for. If the Craigentinny meadows can be made to produce four crops in the year, bringing from £40 to £50 per acre, may not the lands on the banks of the Gala be made to produce two? The superiority of liquid manure from the farmyard is so great over city sewage, where there is so much dilution with water, that I should suppose that one ton of the former is equal to twenty tons of the latter. I have not time in this address to enter into the subject of collection and distribution; but I am so impressed with the utility of the matter, and the profitable results that would accrue to the farmer, and the benefits it would confer upon society, that I think it were worth the serious consideration of both landlords and tenants.

Mr. Wm. Riddle, Rink, though agreeing with the views stated regarding the fertilising properties of liquid manure, doubted very much whether its distribution on the farms of this district would pay for expenses. Mr. Thomson's remarks in depreciation of guano were unfounded, the value of that manure resting on too wide an induction to be overturned by the statement that the quantity applied to each turnip was so small that it could not have any efficacy. On one drill, this season, no guano had been put; and, though the turnips were only recently thinned, he saw that the return on that drill would be too small to pay the labour; while all the other drills, done up with guano, were looking very well. Mr. Haldane's experiment was not a case in point. The field had been already manured to excess, and the guano had no chance of making its power seen. He had no doubt that the use of guano increased the turnip crops tenfold.

Mr. Gibson (Windydoors) thought there was no doubt that on the general principle of the fertility of liquid farm manure, Mr. Thompson was quite right; but the expense of its distribution by the suggested plan would absorb its value, and leave nothing in the shape of profit. It had been tried very carefully in Ayrshire; and it was found that horse labour employed in its distribution cost more than could be taken from the products grown by it. It was unsuitable for grass meant for sheep or lambs, and would injure them.

Mr. Smail (Galashiels Mill) said if landlords would put up engines to throw the liquid manure to the elevated ground, so that it could be led by pipes to the fields, he had no doubt that would be the best means of utilizing the liquid manure; but at present farmers had no profitable way of getting it to the soil. He had several times seen Mr. Harvey's farm, near Glasgow, where immense crops of grass were raised by pumping liquid manure to a high level, and then scattering by hose and pipes over fields. These fields were either for pasture or cutting, and the grass was eaten by dairy cows. He understood that farm paid very well.

Mr. Elliot (Hollybush) said: Wherever liquid manure could be applied by gravitation to grass, it would pay well; but the quantity made on a farm was much less than many people thought. He had tried the experiment for one year of using a water-cart to throw it over young grass meant for the sheep and lambs, but it did not pay him. He found that the horses' feet and the wheels did more damage than the manure did good, and the result was that he had to cut the grass at last. On hill slopes it would be found totally impracticable to use water-carts without a great expenditure of horse-power. It would not do to apply it to the land during winter, he thought; and that implied immense tanks to keep it until it was needed. The Edinburgh sewage went over the meadows in thousands of tons per acre—a very different thing from going out with a water-cart and sprinkling it over rough hills. He did not think it impracticable to utilize the liquid manure on any of the farms in this district by throwing it on the dung-heaps, or making it into compost heaps.

After some more remarks from Mr. Thomson, the following was declared to be the opinion of the club on the subject: "That while this club are satisfied of the fertilizing properties of liquid farmyard manure, when applied to the soil, they still think that when its application by gravitation is impracticable, it will not pay to employ any of the other modes of *direct* application hitherto in use, all of which involve considerable expense."

HINTS FOR THE DAIRY.—Care should be taken during the warm weather that the cows should be in pastures with convenient shade, or their constant uneasiness from the teasing of flies hinders their feeding, and their becoming so heated from running has a very injurious effect on the milk, which is less in quantity, very soon becomes sour after being taken from the cows, and does not yield nearly so much produce, and hence considerable loss arises. If the herd be brought into yards to be milked they should have the shade of cool sheds, or the operation of milking is very tedious from the cows not standing, and often much milk is spilt from the awkward moving of the cows, and the whole is not taken from them, which it is sometimes under these circumstances almost impossible to do. This on every account should be avoided, for the milk that comes last is the richest, and besides, if the cows are not clean milked, there will be a gradual diminution of the milk perceptible daily; for these reasons the greatest care should be taken that the cows are clean milked. A sufficient number of milkers should be provided to allow the cows to remain only one hour in the yard; eight is about the proper number for a good milker to do well within the hour. If a sufficient number are milked to employ a man to carry in the milk to the dairy, it has been found to save much trouble; this man, with yoke and buckets, should go round to collect from each milker as his pail becomes nearly full, and so lighten each one's load to carry from cow to cow, and prevent their individual journeys from the yard during the milking hour; by this means the milk is taken to the tub or vat in a much more equal temperature than if longer exposed to the heated atmosphere in the pails; and such a precaution has been found to act well on the cheese and butter produced from it. When the cows have to be pastured far from the homestead, it is sometimes desirable to milk them in the field, for a drive along a hot road exposed to the sun does as great harm to their milk as racing about the fields when exposed to the sun. A vessel is then taken on wheels drawn by the milkers or a horse, according to convenience, and this should be left to stand in a cool spot, and be taken home steadily with as little shaking as may be. The cows should get a change of grass once a week, even if to no better pasture; they are found to feed better and keep more settled than if left longer in one field. A good supply of fresh good water for them is indispensable for their doing well and yielding a quantity of milk.

OUR COAL, FOOD, AND POPULATION IN 1966.

SIR,—According to Mr. Jevons's estimates, our present consumption of coal (100 millions of tons annually) will be increased in 1966 to 3,000 millions of tons, or thirty-fold larger than at present. This calculation implies that the necessary human labour in connection with the getting, distributing, and use of this enormously increased quantity shall be forthcoming when required. Will any of your readers kindly give me an estimate of how many of our population are now thus employed? I am induced to ask this question, because, according to reliable statistics, our population in 1966 will bear no relative proportion to the increase of coal predicted by Mr. Jevons, and it is singular that in the anxious Legislatorial debate on this important subject no allusion was made to our probable population in 1966.

If I am right in my estimate, the population of the United Kingdom in 1966 will only have increased one time, or become doubled, while our coal is to be increased thirty times! Can this be so? I think not. The consumption of coal annually in London is about five millions of tons. If our London population should be double in 1966, would the consumption exceed 10 to 15 millions of tons? If it increased thirty times (Mr. Jevons's calculation), it would be 150 millions of tons. What an enormous increase of railroads and their accompaniments is implied by this increase alone! I am no believer in it, for it naturally implies that our shipping, railways, &c., should all likewise increase in due proportion.

According to Mr. Jevons, the present rate of growth in the production of coal is 3½ per cent. per annum. This, judging from the past, is an increasing rate of increase; not so with our population—that is a decreasing rate of increase. For instance, the annual rate of increase of population for England and Wales in the years 1841 to 1851 was 1.221 per cent.; 1851 to 1861, 1.131 per cent. The estimated population of England and Wales for 1966 is 38,015,462, or only an increase of one time, while our coal increase is estimated at thirty times. Surely there must be some discrepancy here, probably some over-estimate of our future coal consumption, or some under-estimate of our increase of population, although the latter is calculated from a very reliable source. I hope this subject will be well ventilated in your columns.

Great anxiety is expressed about our future supply of coal but none as to our food. When I express my surprise at this I am told "Oh! but we can always buy our food from foreigners." I reply, "and so you can coal." "But it won't answer our purpose to buy coal. We want cheap coal."

Well, but don't you want cheap food? and cannot cheap food be produced in Great Britain? I maintain that it can provided you take the same means to produce it, as you do to produce more cheap coal. That is by the investment of more capital and intelligence. Not that I expect that this will be rapidly done. Agriculture is too much shackled and trammelled by a variety of sentiments and circumstances to rank with trade, manufacture, and commerce, in material progress; but it may be useful to point to its shortcomings, and to stimulate to a more profitable state of things. I don't believe landowners or farmers are at all agreed as to the most profitable acreable capital to be invested by each of those interests to secure a cheap and profitable result.

Before Mr. Jevons's anticipation of an increased coal supply can be realised, untold millions of new capital must be invested in mine-sinking and machinery. So it ought to be with the production of our food; that cannot be increased without a considerable addition of invested capital on the part of landowners and tenants. What greater proof do we need than that, because we do not produce enough, the foreigner steps in to fill up the deficiency?

If as much food were produced generally in this kingdom as on my poor farm, and many others that I could name, we could not consume one-half of it. This is no exaggeration; but then in my case, and in many others, the capital employed is three-and-a-half to four times as great as the general average of the kingdom, and I repeat that it is mainly by the investment of a great additional capital in agriculture that we can hope to be able to feed our population abundantly and cheaply.

If this is true, then, remove all obstacles and make the road free and open, so that capital may be tempted and invited to come that way. But what a vast field is that of agricultural investment on the part of landlord and tenant! The paltry increase of capital to the extent of £1 per acre would amount to £60,000,000, while really there is scope for from ten to twenty times that amount. The whole animal capital of the kingdom is only equal to one sheep per acre. An additional sheep per acre would add about £120,000,000 to the farmers' capital.

When dealing with 60 millions of acres, every investment presents a gigantic total. It is easy to talk about £5 an acre for drainage, £2 per acre for a steam-plough, £1 per acre for guano, £5 to £6 per acre for covered-yards, and no end of money for many other improvements, to say nothing of a readjustment of the forms of our farms, with a view to a business-like and profitable result. The task is a herculean one, and much of the land must pass into other hands, or become subject to new conditions, ere the necessary funds for agricultural amendment should be forthcoming.

How can the farmer with £4 an acre capital (the average of the kingdom) compete successfully with the Norfolk or Lincolnshire or other good farmers who invest £16 per acre capital? The result of such competition is a silent absorption of means, or an infliction of pinching poverty. The same commercial law of supply and demand acts in corn as in cotton, or any other merchandise.

We do not produce enough food for our population. The foreigner steps in and fills up the deficiency. In a superabundant harvest he sends us little; in a defective one we get from him large supplies. It is because we do not produce enough that he supplies us. We could produce more than enough if we chose to invest in food production a more ample capital and intelligence. We have plenty of both at command. I reiterate that it is a gross national error to loan our enormous profits to every poor foreign potentate when capital is required at home for the production of our food and employment of our labour.

How to bring it to bear, to tempt it and encourage it to flow to agriculture, is a question worthy the attention of all well-wishers to their country. It is certain that the more difficult it is to transfer land, the less prospect there is of its changing hands or receiving the fertilising influence of capital and intelligence.

I was very much struck with a statement made to me by a most intelligent American, a member of their Parliament, who said: "We have merely to walk into our county register-office, and in less than an hour we know all about the land we wish to buy as to mortgages or incumbrances, the buyer and seller appear, make the proper transfer, &c., and the whole thing is at once settled at an insignificant cost." So it is with our own public funds, where comfortable book-keepers arrange the matter between buyer and seller in a few minutes. The stockbroker charges 2s. 6d. per £100; in transferring land we pay £2 10s. per £100; and in addition a delay often of many months.

I must leave it to our longheads to arrange how all this is to be altered, which it certainly must be ere capital will abound in agricnlture for the production of cheap and abundant food.

J. J. Mechi.

August 3rd.

LEGAL DECISIONS.

ACTS OF HUSBANDRY BY AN OUT-GOING TENANT.

At the late Warwick Assizes an action was brought by Mr. John Law, a farmer, against Mr. F. Morrall, also a farmer, to recover from defendant £43 14s., the value of certain acts of husbandry done by him on Brookfields farm, as out-going tenant, for the benefit and use of the defendant, as in-coming tenant, and also for the value of two ricks of straw, four bags of wheat, and one acre of seeds, sold by the plaintiff to the defendant. The plaintiff is an ordinary yearly tenant, and has no written or special terms with his landlord. After the commencement of the proceedings defendant paid £19 10s. into Court, in alleged satisfaction of the debt. From the evidence, it appears that plaintiff received from his landlord notice to quit at Michaelmas last, and previous to that period he had ploughed and otherwise prepared a quantity of pea brush, intended for wheat and other spring crops, for the benefit of the landlord or in-coming tenant. At Michaelmas, defendant, who had taken the farm, specially instructed plaintiff to plough three acres of bean brush, which plaintiff at once did, and shortly afterwards he gave up possession of a portion of the premises to defendant's men and horses, who entered upon the farm, while he (plaintiff), by virtne of his customary right, retained possession of the remaining portion of the premises until May last to consume a quantity of straw. Defendant purchased from plaintiff four bags of wheat and a rick of straw, containing five tons, at 2s. 6d. per cwt. Plaintiff afterwards instructed Mr. W. Endall, an agricultural valuer and auctioneer at Henley-in-Arden, to value the acts of husbandry and things on the farm usually paid for and taken to by an in-coming tenant; and the defendant agreed to abide by Mr. Endall's decision. Mr. Endall subsequently sent in his valuation to the plaintiff, who forwarded it to the defendant, and requested payment of that and of the rick of straw and four bags of wheat, as also of a second rick of straw, which defendant had agreed to purchase at the same price as the first one, and which he had taken possession of by removing it off plaintiff's rickstaddle, and using some portion of it. Defendant, however, repudiated the valuation (although he had seen all the lands on which the acts of husbandry were done), inasmuch as he had not instructed the doing of such acts; and he also refused to pay for the second rick of straw on the ground that plaintiff had not complied with the term of an alleged agreement to give up possession of the whole farm at Lady-day. Plaintiff denied the existence of any such terms, and commenced this action. In cross-examination, plaintiff and Mr. Endall swore that it was the custom of the country not to have any summer fallows on small farms where the land was kept clean and in good condition, and that it was usual and customary to break up pea brush immediately after the crops had been harvested; and Brookfields farm being a stiff soil, and undrained, it was requisite that this custom should be strictly observed, otherwise the occupier would have difficulty in doing his acts of husbandry after wet weather had set in. Mr. Endall had positively sworn that defendant had told him that he was satisfied with his valuation, and was willing to abide by it, and also that by the custom of the country defendant, as in-coming tenant, was liable to pay for the acts of husbandry done by the plaintiff. At this stage of the case the Judge put it to the learned counsel for the defendant whether, after this evidence, the defence could be successful, and suggested that the parties should endeavour to effect a compromise. The learned counsel and solicitors on both sides, with their respective clients, thereupon consulted together, and after a few minutes' deliberation defendant consented to a verdict being given for the plaintiff for £21 (exclusive of the sum paid into Court) and costs, and the case concluded.

WARRANTY OF CATTLE.

At the Norfolk Nisi Prius Court, on Saturday, July 28, before the Lord-Chief Baron and a special jury, an action for breach of warranty—Core *v.* the Manchester, Sheffield, and Lincolnshire Railway Company—was tried. Mr. O'Malley, Q.C., and Mr. Merewether were for the plaintiff; Mr. Keane, Q.C., and Mr. Metcalfe for the defendants.

The plaintiff's case, as opened by Mr. O'Malley, was that on or about the 22nd of September in last year, by accident, a lot of cattle (109 in number) which had been consigned from Trowse in Norfolk to Liverpool came into the ownership of the defendants, and as they were thus thrown upon their hands their object was to get rid of them as soon as they could; with this view the cattle were carried on to Norwich market, where they arrived on the 23rd of September. At that time (so it was alleged) Norwich and its neighbourhood were sorely afflicted with the cattle-plague, which had not reached St. Ives and Peterborough—places that were then uninfected. The beasts stood in the market for some time, but a sale of three only was effected. In consequence of this another market was sought for the rest, which were taken to St. Ives. There, however, none being sold they were again carried on towards Peterborough, and arrived at Warrington, a place about three miles from Peterborough, on the 29th, when they were taken to a field which was hired for the purpose by a cattle-salesman named Brophy. In that field they remained till the 2nd of October, when they were put up for sale by a Mr. Mann at Peterborough fair, when, so it was stated, a warranty was given that they were sound and healthy; and in answer to a question put by some one bidding at the sale, Mann, on instructions received from Brophy, said that they had not come from Norwich. The plaintiff bought 25 of the beasts and took them home with him. On the 6th of the month the disease made its appearance, and on the 16th only two remained alive, two other beasts belonging to the plaintiff which were in the field with them dying from the disease also.

At the close of the case for the plaintiff,

Mr. Keane submitted, first, that there was no evidence that the beasts had taken the plague when they were sold; secondly, that there was no evidence that the defendants knew that the cattle had come from Norwich; and, thirdly, that the damage should be confined to the ordinary damage, viz., loss of the beasts purchased.

His Lordship ruled that, as to the two first objections there was evidence to go to the jury; but that the defendants might have leave to move to enter the verdict for them on the second point, and that as to the damages he should direct the jury to find separately—first, for the actual damage from the loss of the cattle; and, secondly, for the consequential damage.

Mr. Keane then addressed the jury for the defendants, contending that Mr. Mann did not know that the beasts had been at Norwich, and that his answer was a guarded one, showing a desire to refer the inquiries to Mr. Brophy for information on that head; and that as to the warranty, what Mr. Mann said amounted only to a statement of his belief in the soundness of the animals, that the animals were examined at Norwich when they arrived and when they departed, and that they had not the disease in them then; that they were well when they got to St. Ives, and that being exposed to contact with other animals at Peterborough fair, and wearied and heated with their previous journeys, they were in a condition to take a disease which they had not got till then.

His Lordship, after a careful summing up, left to the jury three points—first, whether the beasts when put up for sale were warranted to be in a healthy condition; secondly, whether Mann said the cattle had not been at Norwich; and, thirdly, whether the defendants knew when the beasts were sold at Peterborough fair that they were affected with the disease.

The jury found on all points for the plaintiff to the amount claimed, viz., £1,100, leave being reserved to the defendants to move—first, to reduce the damages; and, secondly, to enter the verdict for them. The case was not concluded till a late hour in the day.

THE SHROPSHIRE SHEEP SALES.

The Shropshires, as the favourite sheep of the north-western counties are called, have undergone a considerable change since we first became intimately acquainted with them. Great care has been taken, and considerable skill displayed by leading breeders to bring this breed to something like uniformity of type, colour, and quality of wool. But while there is a fair opportunity for saying this much, it must also be admitted there is ample room for much more to be done. Another promising sign seems to be the abandonment of the attempt to accomplish impossibilities as regards great size and form combined with fine quality and an aptitude to fatten. A breed of sheep of this character will be sure to produce as many heavy sheep as will be required to supply whatever demand there may be for enormous legs and "noble" looking haunches and saddles of mutton. To aim, therefore, at bringing the whole breed up to something beyond an ordinary size and weight would be erroneous, both as regards the producers and the consumers; for there is no doubt whatever that size goes in at the mouth, and that the weight of an animal cannot come out of nothing, but is the result of its eating, digesting, and assimilating so many hundredweights of turnips and so many pounds of cake and corn. It cannot be any more profitable, therefore, for a farmer to produce a ton of mutton in the form of fifteen or twenty sheep than it would be with twenty-five or thirty. This is supposing the fair-sized ones to be equally thrifty and predisposed to mature. And as regards consumers, beyond the few exceptional purchasers of large joints for public dinners and special and large parties, it is much more convenient and agreeable to have a middling-sized joint, or two small ones, than a large one, or a leg or shoulder divided into two parts, both of which would be awkward to cook, and neither of them first-rate to eat. Another favourable symptom was, there had been much less stuffing and cramming to produce a sensational effect. This may have arisen perhaps from the absence of a Royal show this year, with which Society the "just-to-see-what-can-be-done" notion has been either far too much encouraged or too little checked. It is to be hoped that when the Royal Society resumes its exhibiting duties it will make imperative a due observance of discretion in feeding, where hitherto the management has been a little too near-sighted, or, if not so, much too milk-and-watery.

Mr. Coxon's sale at Freeford, on July 30, may be characterised as the great Shropshire sale of the year. His average for sheep let and sold was £19 5s. This great result in favour of this flock may be attributed to its owner's spirited action in securing the first Royal prize shearling at Newcastle. This sheep was named Duke of Newcastle, and as he was undoubtedly the most complete Shropshire sheep we have ever seen, there need be but little said to prove that he has made a considerable mark on the issue of this flock. His produce are now shearlings, and therefore coming into use. Of his issue there were 22 males, which realised upwards of £490, or £22 7s. 6d. average—not a bad return for an investment of £80, the price said to have been given for the Duke of Newcastle. This sheep has now been let for £40 to Mr. Horley, of The Fosse, on condition that Mr. Coxon sends so many ewes to him, with some other private arrangements of a reciprocal kind. One sheep by The Duke, "Clipstone" by name, was let to Mr. Evans of Uffington, who is a spirited improver of his flock, for 45 guineas; "Conservative," another excellent sheep, was let to Mr. Wright, Stafford, for 26 guineas; Mr. Hutton took one for Lady Willoughby De Broke's flock, at 44 gs.; Mr. Allsopp, a member of the great brewing firm, who has taken to farming, secured one at 47 guineas, and another at 27 gs. Captain Oliver, of Towcester, obtained a good sheep, for which he gave 38 guineas. A few ewes were afterwards sold, the highest price given for which was 140s. each, and the general average very nearly 72s. 6d.

The first of the Shrewsbury annual sales came off on July 31st in the Smithfield, when Mr. Preece, who is now so well known for his liberal application of adjectives to his description of the Shropshires, officiated in his best or most buoyant humour, and, as we think, with a more judicious economy of time and words than we have had to observe on some previous occasions. As it was, it took six hours to sell the rams on the ground. But this time was systematically divided, ten minutes being allowed for introductory remarks and two minutes for the disposal of each sheep. On this plan the catalogue was marked "11.0—the time the sale began—Messrs. Crane's Rams;" "11.53, the Rev. Mr. Peters';" and so on. Thus any owner of sheep or purchaser who wanted a particular animal, and only that one, could go elsewhere, and be sure of the time at which a particular lot would be sold. So long as six hours are occupied in "knocking down" 200 sheep, this is a very necessary regulation; and as Mr. Preece kept the time named to a minute, it was attended with unusual convenience; and the example may be profitably followed elsewhere.

The Messrs. Crane had 26 rams, and they were of the most uniform character and in the best condition that we have ever seen this flock. They have of late years been more celebrated for producing ewes than rams, but a favourable turn seems to be taking place in respect to the production of tups by their flock. From being in a less forced condition, the legs of these sheep were on this occasion neither warped, nor otherwise defective. The leading prices were 20 guineas to Mr. Keeling for a very neat sheep; 21 guineas to Mr. Botteley, near Stafford, a young beginner, who is setting a flock under good judgment, from having had considerable experience and the practical knowledge to be obtained by being for some years under the instruction of Mr. Keeling at the Yew Tree Farm. Lord Chesham had a sheep bought for him at 29 guineas; Mr. Pitt of Posenhill bought one 28 guineas; and Mr. Darling of Beau Desert, Rugeley, bought a good useful stock sheep at 14 guineas, which was the average.

Mr. Henry Smith, Sutton Maddock, adheres to his determination to make true form and fine quality the leading features of his flock; as he also, in carrying this out, sticks to brown faces and less ranging frames and close coats of fine wool, his sheep are not so much sought after just now; and though they were amongst the most symmetrical on the ground, for the foregoing and other reasons, the prices they made were not high. Mr. Keary bought two for the Hon. E. Coke, Longton, near Derby, at 12 and 16 guineas respectively; and one was sold for 19 guineas. The average was 12 guineas. Mr. H. J. Sheldon, Brailes House, Warwickshire, sent 6 rams, 5 of which were sold at 22, 14, 25, 13, and 21 guineas. These were very compact, close-coated, brown-faced sheep, and their hardy appearances sufficiently indicated that they had weathered the wind and rain on what is looked upon as being the highest ground in the centre of England. Mr. Thornton, of Pitchford, was the breeder of "Duke of Newcastle," mentioned above in connection with Mr. Coxon's flock and sale. The sire of this sheep let in 1864 at 65 guineas, last year at 20 guineas to Mr. Bird, and this year at 20 guineas to Mr. Minor. In 1864 Mr. Thornton's few sheep—18, if we remember rightly—made the highest average yet recorded, viz., nearly 30 guineas each. This year he has not been so fortunate, but he cut a respectable figure, and there are signs and elements in the appearance of these sheep which foreshadow another "plum," if not a Royal first prize, at no distant date. One was let for 20 guineas, another at 15 guineas, another at 21 guineas, while one was sold at 24 guineas. The remainder made store prices between 8½ and 13 guineas.

Mr. Thomas Horton had fourteen strong and thick sheep on short and stiff legs. One was bought for Lord Sudley, of Gloucestershire, for 14 guineas; another by Captain Bruton, of Cheshire, for 20 guineas; another at 14 guineas, for Lord Stamford; another made 21 guineas; and the whole averaged about 13 guineas. Mr. Mansell had twelve very useful rams, one of which was a Plymouth Royal prize sheep, and he was hired for Colonel Pennant, of Penrhyn Castle, at 30 guineas; another was sold at 17 guineas, and the remainder made fair prices.

The honour of the day fell on the flock of Lady Willoughby de Broke, to the merits of whose sheep we have so often spoken of late; and the average of the twenty sheep sent reached above 17 guineas. The higher prices were 31, 30, 28, and several at 20 guineas each. These were strong, thick, fleshy sheep, much of a muchness with Mr. Horton's, from whose flock many of them descended in a direct line. These sheep carried a large quantity of wool; but wool is likely to be beaten by the price of mutton, now cotton is again getting abundant, and importations of wool have so greatly increased.

The other exhibitors were Mr. Pryce Bowen, Shrawardine, whose flock seems to have taken one of those turns which no one can account for, viz., not to have produced a few sheep so kingly good, although its reputation stands high, and this aracter is likely to be again conspicuously developed in ture years under Mr. Bowen's spirited management; the Rev. C. P. Peters; Mr. Evans, Uffington; Mr. Maddox, of Harley; Mr. Meires, of Bennington; A. H. Minor, Esq. The Hon. and Rev. Noel Hill and Mr. John Whitehurst also had sheep for sale, but which we have not space to say more of, than that they were useful for direct store breeding, and they made good prices according to their individual merits.

On Tuesday, July 31, about 800 ewes were disposed of by Mr. Preece. These were from the same flocks as the rams sold the day before, and the draft of store breeding flocks in the ighbourhood. Messrs. Cramer made great prices, two lots aching 130s. each, another 140s., others 105s., 100s., 90s., so on, the lowest price being 80s. each. One of the lots, 10s., was bought for Lord Combermere, who is setting ck in a way that cannot fail, under his lordship's well- wn practical knowledge and good judgment in respect to kinds of domestic animals, to arrive some day at consider- distinction. Mr. Evans' ewes were a most excellent col- of eighty; and one lot made 150s. each, which were bought for Lord Combermere. In addition to draft from the flocks of the other ram-breeders above-named, were many other pens from breeders who do not aim at ing like enviable distinction, some of which, however, very good, while some were what may literally be termed tag-rag and bobtail of store flocks, whose owners have ly more desire to try their luck at a public sale than about making a public exhibition of their cripples otherwise imperfect animals they have discarded from cks.

SHEEP SALES.

at Cotswold Tup Sale.—Mr. Lane's sale at Broad- Northleach, on Thursday, July 26, drew together one of the companies ever seen on the hills. His sheep averaged 11s. 9d. each, one sheep being knocked down at 210 eas. A gentleman from Herefordshire was a bidder for sheep; but the hammer fell to the bidding of Mr. John Tombs. Mr. Fletcher bought a sheep at 122 guineas. now certain that Mr. R. Lane, of the Cottage Farm, and brother Mr. William Lane, have carried off the palm for highest averages for Cotswold sheep on record. Mr. R. 's sheep in 1861 averaged £34 10s. 8d. each.

inburgh.—Several kinds of half-bred hoggs sold in lots 46s. up to 54s.; smaller sorts and crosses sold from 38s. 4s.; Cheviot and black-faced ewes sold from 24s. up to 40s. best class of lambs sold from 30s. up to 36s.; middling 23s. up to 28s., and down to 14s.

st Lothian.—The best class of hoggs sold from 52s. to 9d.: smaller sorts, from 46s. to 51s. 6d. Half-bred ewes ght from 42s. to 49s. 3d.; Cheviot hoggs, from 50s. to 53s.; Cheviot ewes, from 40s. to 48s. 6d.; black-faced ewes, 27s. to 30s. 6d.; half-bred lambs, from 25s. to 37s. 6d.; pshire cross lambs, at 42s. 3d.; grey-faced lambs, from to 30s.; and a fat pig, at 102s. Hoggs realized from 2s. in advance of last week's prices. Ewes were a shade er.

lrose.—Dinmonts and gimmers ran from 43s. to 45s., 50s. 6d., 53s., 55s. 6d., and 67s. 6d.; ewes, from 46s. to 50s., 55s., 58s., and 60s. 6d.; Cheviot ditto, 34s. to 37s. and 40s. 6d.; fat lambs, 25s. to 28s., 30s., 36s., 40s. 6d., 41s. 6d. Pigs, 12s. to 19s. 6d. Wether mutton, 7½d. to ½d. and 9d.; tups, ewes, &c., 6½d. to 7½d. per lb.

he Yew Tree Farm Sale.—Mr. C. R. Keeling's annual was held on Friday, July 27, when, from the known high acter of the flock, and the spirited purchases made by the er, a large company assembled. Only one was let, which Randell took at twenty guineas, and the same gentleman bought No. 4, at forty-three guineas. Others followed at irty, twenty-five, twenty-four, twenty-two, down to nine ineas—the whole number, thirty-one, reaching within a few of £16 per head. The ewes have been larger in size; t they were neat, full of quality, and true in colour and aracter, and were eagerly sought after by those to whom the erits of the flock are best known, the prices being from 72s. to 100s. each, the eighty averaging 82s. 6d. Mr. Preece, of hrewsbury, officiated as auctioneer.

Mr. Edmund Olding's Sale of Rams.—The annual sale took place on Wednesday, July 25, at Ratfin Farm, near Amesbury. The stock consisted of 122 ram lambs and rams, of which 100 ram lambs and nine rams were to be sold, and ten lambs and three rams were for letting. No. 7 was let for 23½ gs.; but this sum was afterwards increased to £30, in consideration of an extension of the time of hiring. The sale of 100 ram lambs, singly and in pairs, then took place. A two-teeth realized £25 14s. 6d., and another two-teeth £17 6s. 6d. The average of the rams and ram lambs let and sold was £8 7s. 8d.

Marham Hall Farm.—The annual show and letting of long-woolled rams by Mr. T. Brown, of Marham Hall Farm, took place on Thursday. The first ten lambs let for £82 5s., an average of £8 4s. 6d.; Mr. H. Beck giving ten guineas for one lot, and Mr. Herring £9 10s. and £9 respectively for two lots. The first twenty let for £138 10s., an average of £6 16s. 6d. The fifteen lots of two lambs in each lot let for £191 10s., or £6 7s. 8d. each animal; the fifty lambs thus let for £330, an average of very nearly £6 12s. each. The first ten shearlings let for £89 9s., an average of £8 18s. 10½d. each; the first lot put up being the winner of a first prize at the Suffolk Agricultural Show at Bury St. Edmund's, and being hired by Mr. Bird, of Shouldham Abbey, at £11 5s.; the first twenty let at an average of £9 3s. 8d. each, Mr. Brackenbury giving £13 5s. for one lot. The first thirty let at an average of £9 6s. 11d. each, the first forty £8 19s. 1d., the first fifty £8 15s. 11d., the first sixty £8 14s. 7½d., the first seventy £8 10s. 4d.; the eighty at a total of £661 4s., being an average of £8 5s. 3½d. The ten two-shear rams let at a total of £68 15s., being an average of £6 17s. 6d.

Kesgrave Sheep and Lamb Sale.—Messrs. Biddell and Blencowe held an important sheep and lamb sale at Kesgrave. Some 2,000 were offered. Half-bred lambs, 32s. to 44s., the average being 36s. 6d.; Southdown lambs, 26s. 6d. to 36s. 6d., the average for the Newbourn Hall flock being 32s. 3d.; shearling Southdown ewes 48s. to 55s.; two-shear grey-faced ewes, 59s. to 62s.; crones, 35s. to 42s.; cast ewes, 42s. to 54s.

SHEEP SALE AT DUMMER HOME FARM.—The sale of Messrs. Downs and Awbery of the flock of pure-bred Hampshire Down ewes, ewe lambs, rams, and ram lambs belonging to the Rev. Stephen Terry, of Dummer Home Farm, took place at the Home Farm, on July 27, and attracted unusual interest, and more than an ordinary attendance of the principal flockmasters, dealers, and practical agriculturists and connoisseurs of good breed in sheep from Hants and the neighbouring counties. Two-teeth ewes fetched from 71s. to 105s., the whole 112 averaging £4 5s. per head, less 1s., on the whole. The 125 four-teeth ewes sold from 67s. to 87s.; average £3 16s. 6d. per head. Ninty-five six-teeth ewes, from 69s. to 78s.; average £3 13s. 6d. per head. One hundred and fifty full-mouthed ewes realized from 66s. to 96s.; average £3 16s. per head: making an average of £3 17s. 9d. per head for the whole ewes flock, and an aggregate of £1,866 15s. 6d. for 482 sheep. The 130 ewe lambs varied from 46s. to 105s. each, or an average £2 13s. 3d. per head. The 36 ram lambs from £5 5s. to £22 11s. 6d. each, or an average of £8 2s. each.

SALE OF LONG-WOOLLED NORFOLK RAMS.—The sale of long-woolled shearling rams, bred by and the property of Mr. Charles Bradfield, one of the tenants of his Royal Highness the Prince of Wales, took place at Babingly Hall farm on Friday, July 27. Mr. F. Beck offered for sale 80 long-woolled shearling rams. The prices realized were in advance of last year. The first ten averaged £8 19s. each, twenty £8 18s. 9d., thirty £8 18s., forty £8 15s. 3d., fifty £8 14s., sixty £8 7s. 10d., seventy £8 2s. 9d., seventy-six £7 19s. 5d. The total amount realized was £624, including three two-shear sheep. The bidding was very spirited, particularly for the best animals. A very fine sheep, which it appeared had been brought up by hand by Miss Hannah Bradfield, was purchased by the Prince of Wales for £15.

THE RAM SALES AT HEREFORD FAIR. — Mr. Henry Dowle sold a draft of five rams from the Cotswold flock of Mr. Smith of Bibury. The competition was keen, the highest price realized being 26 guineas and the average £17 6s. The next lot was a draft from the Cotswold flock of Mr. Theyer, of Walford Court; the average for eleven was a little more than £8. Mr. Bradstock, of Cobrey Park, sent 16 of his shearling rams, and the average was 6½ guineas. Mr. Alfred Edwards sold 17 of the Credenhill shearling rams at an average of £7 5s. For Mr. Paramore, of Dinedor Court, Mr. Edwards sold three shearling rams at an average of 6 guineas. Mr. George Pye represented Mr. Davis, of Webton Court, and obtained an average of £8 10s. for yearling and older rams. A draft of 30 stock ewes, from Webton Court, fetched £3 17s. a-head. For Mr. Price, of Pennalt, Mr. Pye sold 20 long-woolled shearling rams; the average was £8 5s. Messrs. Russell and Son were the representatives of Mr. J. B. Downing, of Holm Lacy. The lot comprised twenty yearling rams, displaying the characteristics of the Ryeland breed. Twelve only were sold, the prices of which ranged from 5½ to 11 guineas, the average being 7½ guineas. Mr. Russell next sold six rams of white-faced breed, of Mr. Pinches, of Hardwick, and a keen competition resulted in an average of £4 18s. Mr. Russell's last lot was a draft of 25 yearling Leicester rams from the flock of Sir Edward Cockburn. Eight only of the lot were sold, at an average 7½ guineas.

THE MARKSHALL RAM LETTING.—The annual letting of Mr. Thomas Allen's rams took place on Aug. 10, at Markshall, and was well attended by the sheep-breeders of East Norfolk. 47 shearling and 3 two-shear rams averaged £6 9s. 3d. each, the highest price obtained being £10. The two-shears were let at an average of £7.

MR. SEXTON'S RAM-LETTING.—On Aug. 10, Mr. Sexton, of Wherstead, held his annual sale and letting of ram-lambs from his flock of Cotswolds. The lots of lambs were 100 in number, and in spite of the unfavourable weather their quality was such as to command a spirited competition as soon as they were led into the ring. The upset price in all cases was 5 guineas, and at that price only a few animals were passed. The first fifty lots were two-shear and shearling rams, which were offered for sale. The first was knocked down to Mr. Nicholls, of Lawshall, near Bury, for £11; the next lot was sold to Mr. E. Green, M.P., for the same price; after which the bids amounted to £7 to £8 10s., till the sixth lot, which was knocked down to Mr. Dring, of Clacton, for £15 10s. After this the highest price reached was £11, and the lowest £6. In letting the competition was equally brisk, and the prices in some cases very high, the highest prices being £15 and £10, knocked down to Mr. Constable. Mr. Chapman also had one ram knocked down to him for £13 5s., and several others fetched £10 to £10s. 15s., and the lowest was £5 10s. The average price of the rams sold was £8 5s., and of those which were let £7 10s. 6d.

THE YORKSHIRE RAM-LETTINGS.—Mr. Stamper, of Highfield House, North Riding, let his flock: the competition was brisk, only one Leicester shearling being returned unlet by the auctioneers. Shearling No. 2 went to the Knapton flock at £12 5s. No. 5 let for £19, to Mr. Hall, of Thirsk; and at £13 Mr. Walker, of Goldsborough, took the own brother to one of the Plymouth sheep. The Hon. and Rev. J. W. Lascelles, of Goldsbrough, took No. 8 shearling at £11 15s., and Mr. Leek No. 12 at £16 5s. The average price of the whole was about £8 4s. The Leckonfield House flock showed the 60 shearlings to average over £8 per head. Mr. Matterson was equally successful with the Newbald flock, also averaging over £8 per head. The annual sale of Lincolnshire rams took place at Bushby Hill on Thursday last, and the sixty-two shearlings were all sold by Mr. C. Tateson at an average of £9 17s. each; seven aged sheep, some of which had been used by Mr. Stephenson himself, fetching an average of £15 3s. 80 rams, the property of James Hall, Esq., of Scorbro', averaged for the shearlings £9 3s., and the net average was was £8 17s. 6d. each.

MR. WILLIAM DAY'S SHEEP SALE AT WOODYATES.—On Thursday Aug. 2, Messrs. Ewer and Winstanley sold by auction, at Woodyates, Dorset, the flock of about 1,100 stock ewes and chilver and ram lambs, the property of Mr. William Day, who has given up breeding, and intends in future to keep a dry flock on the remaining portion of his farm. The sale was admitted on all hands to be the best ever known in this part of England. The quality of the sheep was as good as could be desired, and the biddings were liberal and rapid. During the day the Duke of Hamilton, who has just purchased of Mr. Day the Alvediston estate, sent a telegram to Mr. George Rawlence to buy 200 of the best of the flock, and that gentleman was the purchaser of a large number of animals. Woodyates Inn, the residence of Mr. William Day, as most of our readers are aware, was formerly a well-known posting-house in the days when the coaches travelled this road, which was part of the direct route from Salisbury to Exeter. The old inn is still retained, but Mr. Day has erected a large range of stabling for the accommodation of the race horses trained by him. The flock for sale consisted of 200 two-teeth ewes, 200 four-teeth ewes, 200 six-teeth ewes, and 200 full-mouthed ewes, 200 chilver lambs, 60 ram lambs, and 8 rams. The sale commenced with the Hampshire Down ram lambs, which were sold singly and in pairs. The single lambs realised respectively 23gs., 20gs. 18gs., 16gs., 15gs., 11½gs., 10½gs., 9½gs., 7½gs., and 7gs. The pairs lealised prices varying from 25gs. down to 8gs. The 8 Hampshire Down rams realised as follows:—17½gs., 17gs., 16gs., 11gs., 9½gs., 8½gs., 7½gs., 7½gs. The ram and lambs averaged £8 5s. per head. The down chilver lambs were sold in lots of twenty and ten, and realised from 67s. to 42s. per head, the average being about £2 8s. 6d. each. The two-teeth ewes realised from 115s. to 57s., averaging about £3 17s. 6d. per head. The four-teeth ewes sold at from 120s. to 61s., and realised nearly 80s. per head. The six-teeth ewes sold from 110s. to 64s., and realised about £3 2s. 6d. per head. The total proceeds of the sale amounted to £3,975 18s. 6d. Among the buyers were the Duke of Hamilton, Messrs J. B. Starkey, Rose, James Rawlence, W. Shittler, Perks, Josiah Read, Walter Read, John Read, James Jeffries, E. Benjafield, Collier, John Taunton, William Taunton, Charles Godwin, Morrice, Gifford, Davis, Hayter, Charles Parham, H. Fookes, Harvey, H. Marsh, H. Brine, R. Brine, T. Mayo, Mayo, John Rebbeck, Ruddle, Ferris J. D. Allen, and Rogers.

THE FARMER.—At a recent meeting of the Swindon Farmers' Club, Captain Horsell said: The farmer is the great middle-man between poverty and wealth, between labour and capital, between the many and the few. In the hour of distress the battle always falls back upon him. According to the constitution he is a responsible man. The landlord is comparatively unknown to the law—whether he lives abroad all his days and is never heard of, or resides in the heart of his property, he may be equally a nonentity. In respect of that property he has scarcely one legal obligation. He is a sleeping partner in the concern, but of course no partner at all. The tenant is looked upon as the universal paymaster. In half-an-hour's walk from almost every market-place in the kingdom you find yourself under the sway of these powerful and responsible potentates. Once among green fields and hedgerows, and the tenant farmer is your immediate superior. The road you are riding upon, the ditch you leap over, and the bridge you cross, are maintained by him. If you damage a fence it is his—the cattle are his—the labourers are in his pay. He greatly assists in keeping the carpenter's bench, the saw-pit, and the forge at work—the village shop and the village public-houses are chiefly supported by his servants and labourers. If profits fail, he has to draw on his capital to keep things going; if wages are reduced, he has to bear the odium; if disaffection spreads, his ricks are burned; when he can no longer pay wages, he must still pay rates. If there are widows, or orphans, or old men, or cripples, or sick, or vagrants, the tenant farmer must maintain them; if they die without friends, he must bury them. I am not forgetting that land occupied for agricultural purposes is not more than half the real property of this island—in many respects land has an importance and responsibility beyond its pecuniary estimate—from land is the first start of our prosperity, and in land is the last refuge of our social statistics. Who is so competent and rightful an authority, in matters of domestic finance, as the tenant farmer? and who is more entitled to be represented, as directly and honestly, and truly as can be? And yet, lamentable as it really is, and must appear, in May 1866 we have no Minister of Agriculture, no department to whom we could appeal under special circumstances, and from whom the agriculturist could at once receive attention. How many slaughtered animals would now be grazing on rich pastures, and producing food for man, that now lie buried in the ground, under orders from the veterinary inspector! If there had been an authority to act when the cattle plague first appeared in this country, how many animals would be living that are now dead, how many homes would be now occupied with happy faces that are now desolate—how many rich pastures that remain unstocked would be seen with living animals! how many families that would have been basking in sunshine, under the genial rays of a father's heart, are now scattered helpless over the land, and their guide passed to a lunatic asylum!

MR. AYLMER'S SHEEP SALE.

Mr. Aylmer's sheep-farming is of an extraordinary character. His occupations amount to 800 acres, part of which he rents, the remainder being his own property. There are about 250 acres of pastures, most of which are in the highest possible condition to produce healthy food. This great fertility arises from the amount of root and cake and corn feeding on them, which his great flock and ram-breeding at some seasons of the year require. In addition to the herd, the issue of 350 stock-ewes are kept and fed, excepting the rams when they are out on hire. Mr. Aylmer now has 400 rams. These vary in age from lambs to two-shear and a few older sheep; they are amongst the finest we ever saw. When we have been visiting Lincolnshire and large farms in other counties, we have thought that a show of from 100 to 150 rams was a goodly muster; but this view has been completely superseded, so far as numbers and weight of production go, by Mr. Aylmer's large exhibition. By this—it cannot fail to strike the reader —a Norfolk farmer, single-handed, doubles in number many of the sales of "grand," "superb," and "splendid" rams that may be collected together at a county town. In this Shrewsbury even is not to be excepted. We have seen what we term a finer quality of sheep than Mr. Aylmer's flock possesses, and we have seen flocks composed of Southdowns and Leicesters more of a family type and character. But this we may say, apart from the numbers referred to, we have never seen a more useful and valuable flock, looking at it from a money point of view, and considering the object for which its male issue are intended. The character of these sheep may be simply described as a judicious admixture of Cotswold, Lincoln, and Leicester. There are conspicuous traits of all these breeds, but not one of them is so excessive as to display the defects which are often shown in the older and more original breeds. It is frequently held by farmers, that a flock cannot well be kept together more than 20 years, and it was predicted that Mr. Aylmer would share the fate of many other breeders, but he came into possession of the base of this flock 21 years ago, and he has had the management of it ever since, while from the remarks of neighbours yesterday, the individual sheep get bigger, and better covered with wool, as the production of them increases. This is no doubt the result of not being bigoted, or prejudiced in favour of a particular style of sheep, and of not striving to bring the whole flock up, or perhaps down, to that particular fancy model. After all, the main question must be the value to the butcher. We have repeatedly touched on the question of great size, *versus* the same weight of meat in the shape of more animals; bnt there must be unusual thrift in sheep that will attain the uniform weight of the West Dereham flock. And when we know the necessity for considerable length of leg, neck, and back in the sheep of the Norfolk and Suffolk flocks, which have to walk miles a day from a fold in search of food, and back again to a fold at night, and also that short-woolled sheep only can stand this work, then it is clear that these sheep, with their great thrift, heavy coats, and stiff legs, are well adapted for giving size, substance, and increased wool, with early maturity if required, to the working and breeding ewes of the heaths and blowing sands of the eastern counties.

The number of rams Messrs. Salter, Simpson, and Bacon brought to the ring on Thursday, was 190, viz., 100 lambs, 80 shearlings, and 10 two-shear sheep. This number of less than half the whole of the rams of the farm, and the comparative inconsistency in regard to their ages, arise from the fact that Mr. Aylmer has many distant customers to whom he lets privately, and to the wish that many neighbours have to again take the same sheep which served their purpose so well last year or the year before.

The 100 lambs were certainly extraordinary for the length and weight of wool they carried. Among them were a few greyfaces, and these excited unusually spirited competition. Mr. Leeds, of Lexham, took No. 1 at £11; Mr. John Overman, of Burnham, No. 6 at £12; Mr. Mathews, No. 8 at £11 10s.; Mr. Delf, No. 11 at £11; Mr. Cadden, No 13 at £13; Mr. Howard, No. 30 at £15; while the whole averaged £6 13s. 4d. each.

The shearling rams averaged £9 16s. 6d. each. Mr. Leeds hired the first, at £13; Mr. Lane No. 17 at £17 and No. 20 at £30, the latter being run close by Mr. Mumford Sexton. Mr. R. Overman took No 21, at £13; Mr. Carter, No. 31, at £12; and Mr. Blyth, of Hingham, took Nos. 35 and 36, at £20 each; Nos. 45 and 48 going to Mr. Sewell, of Peckenham, at £14 and £13 respectively. The ten two-shear sheep averaged £7 6s.

The above figures are a considerable advance of last year's letting, notwithstanding the reduction of capital in the hands of farmers from the adverse times; in fact, it is just the difficulties under which the bulk of farmers are now prosecuting their business that have caused the price of stock-sheep, and particularly long-woolled rams, to rise in price. Sheep may be said to be the farmer's only redeeming production, and everyone is making what effort he can to possess himself of the class of production—viz., breeding sheep—to which a fair profit may be said to hang.

DRIFFIELD AGRICULTURAL SOCIETY.

The thirteenth annual exhibition of this society was held on Aug. 3, under the presidency of Mr. W. H. Harrison Broadley, of Welton, on some fields in the occupation of Mr. R. Kirby, of the Bell Hotel. Notwithstanding the threatening appearances of a wet and dull day, the town was thronged at an early hour with all classes of the people, the attractions of this great gathering having become the holiday occasion for immense numbers of the agricultural population for miles round. About £300 was offered in prizes for stock, implements, and poultry. In addition to the usual ordinary prizes offered by the society were the following, viz., a silver cup of the value of £25, given by Mr. C. Sykes, M.P., for the best three-year-old hunting mare or gelding, open to all Yorkshire; another silver cup of the value of £25, given by the society, for the best hunting mare or gelding of all ages, open to all England; £15 by the President for the best hunting mare not less than four and not more than seven years old, possessing three crosses of blood, and to be mounted and ridden in the ring, open to Yorkshire and Lincolnshire; £10 by the President for the best coaching gelding not less than four years old, open to all England; and a silver cup by the society for the best pen of shearling gimmers bred in the East Riding. The entries for horses were 272, sheep 27, pigs 22, poultry 266, implements 83, pigeons 14, rabbits 8, making a total of 670. The great attraction of the show was the number and excellence of the horses. The pens of sheep, though less numerous than in former years, were equal in quality and symmetry to any before exhibited. On the whole the show may be pronounced a very superior one.

A cold collation was provided in a pavilion on the ground, and the usual public dinner took place in the Assembly Rooms, Mr. W. H. Harrison Broadley, in the chair, when the customary loyal and local toasts were given and responded to.

The following were judges: Sheep and pigs—Messrs. George Mann, Scawsby; Thomas Gibbs, Saundby; William Torr, Aylsby Manor. Horses—Messrs. J. H. Skipworth, Howsham; T. Wagstaff, Retford; W. E. Hobson, Kettlebythorpe; J. Wressell, Adlingfleet; J. Hall, Sedgefield; and T. Neale, Scrooby. Implements—Messrs. G. Angas, Bedford; E. Riley, South Dalton; and A. Botterill, Garton.

The special and other leading prizes were awarded as follows: The President's prize of £15, for the best hunting mare, Mr. G. Simpson, of Kilnwick Percy. The President's prize of £10, for the best coaching gelding, Mr. G. Holmes, Beverley. Mr. C. Sykes's silver cup, value £25, for the best three-year-old hunting mare or gelding, Mr. G. Holmes, Beverley. The Society's silver cup, value £25, for the best hunting mare or gelding of all ages—Mr. Thomas Sutton's Voyageur, which took the prize at Islington, Birmingham, and Bridlington. The Society's silver cup, for the best pen of five shearling gimmers—Mr. W. Brown, Highgate Hall, near York. The best shearling ram, £10, Mr. J. Borton, Barton, near Malton; best stallion for hunters, £7, Sir G. Cholmley; ditto for coach-horses, £7, Mr. G. W. Clark, Tibthorpe; ditto for roadsters, £7, Mr. H. R. Hart, Dunnington; ditto for agricultural purposes, £7, Mr. W. Simpkin, Burton Agnes. Best hunting mare and foal, £5, Mr. J. Smith, Marton Lodge, Bridlington; ditto hunting gelding, two years old, £3, Sir G. Cholmley; do. do. filly, £2, Lord Middleton. Best boar, large breed, £2, Mr. J. Dyson, Leeds; best sow, do., £2, do.

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FOREIGN AGRICULTURAL GOSSIP.

Pamphlets on what the French call the *question agricole* abound in France. Every day almost witnesses the publication of some new ones, among which we may first mention a treatise by M. de Lavergne entitled, "L'Agriculture et l'Enquête." M. de Lavergne has taken an active part in securing the application of free trade to external commerce in agricultural products. No one has more effectively pleaded the cause of freedom of outlets, no one has inflicted more terrible blows on the old sliding scale and on the customs' duties levied on the importation of foreign cattle; and no one since the application of the laws referring to external commerce has attached himself with more perseverance and success to the defence of those laws against the attacks of which they have been the object. On all grounds, then, M. de Lavergne is not a protectionist, but he is essentially a free-trader. We may even add that one of the finest services rendered by him in the matter of rural economy is his having established in the most peremptory manner the fact that French agriculture has never been protected against foreign competition, and that the protection of tariffs was only illusory. The only efficacious protection, that which best maintains quotations in a great producing country like France, is, according to M. de Lavergne, freedom of outlets. It is possible, he says, to protect this or that industry, the products of which are limited, by defending it by exaggerated tariffs against foreign competition. But we cannot do this, M. de Lavergne argues, with agriculture, in consequence of the immensity of its product. National competition on a soil of 108,000,000 acres, which supports one of the least dense populations in Europe, produces the same effects and even greater effects than foreign competition. Moreover, when indigenous production runs short from any cause, the necessity of keeping up the public food-supply renders it imperatively necessary to remove all barrier and protection disappears just at the moment when it might be expected to become efficacious in regard to the sustaining of prices. As regards wheat, indeed, M. de Lavergne considers that the French law of 1861 is virtually more protective than the sliding scale; and he affirms that the prices of a great nation like France are regulated by the state of the internal markets. M. de Lavergne has sought in his brochure to combat a very generally accepted opinion which, with regard to cereals and cattle, consists in opposing the cheap lands of America, Russia, and Hungary to the lands which French civilization has carried to a very high value. It seems to be believed in some quarters that by competition French land will decrease in value until it is brought on a level with the cheap land of importing countries. But to this M. de Lavergne observes, that if such countries tend to bring down the value of rural property, the effect will be more than compensated by the action of countries like England, Belgium, the Low Countries, and the greatest part of Germany, to which France exports her agricultural products, and where land is dearer than in France. These English, Belgian, and Dutch lands will, M. de Lavergne thinks, enhance the price of French lands, and if at the end of a series of years the cause of enhancement should be stronger than the cause of depreciation, it appears certain that the soil of France will yield an increased rental. M. de Lavergne contends, in short, that commercial liberty, by raising France to the highest rank as an exporting country, will produce not only an advance in agricultural products, but still farther a rise in the price of land.—Other pamphlets on agricultural subjects have also appeared of late in France. One from the pen of M. Salomon, the able director of the farm school of the Nièvre, treats only incidentally of the *enquête*, but gives some circumstantial documents on the production of wheat. M. Salomon believes in the cultivation of wheat being remunerative, provided that the return exceeds 7½ hectolitres per acre (a hectolitre is about 3 bushels English). The data given by M. Salomon in support of his conclusion are calculated to inspire confidence, and his statement is very instructive.—MM. Becquerel, father and son, have presented to the French Central Agricultural Society a remarkable *mémoire* on the division of rain in wooded and unwooded places. In the study of questions of agricultural meteorology, M. Becquerel, sen., displays an ardour which age cannot slacken, but which might, perhaps, exceed his strength if he did not find in his son a most sure and devoted *collaborateur*. M. Becquerel has treated of the forest production of France, and on the consumption of wood in its relations with the increase of population and the progress of industry, as well as on the influence of wooded lands on the *régime* of waters; and he has now, as before stated, directed his attention to the division of rain in wooded and unwooded places. The question embraced by M. Becquerel is much more general, since it comprises a study of the causes which influence the fall of rain in a determined district; for the present, however, we confine ourselves to the sole point which he approached before the society. After having brought to bear all the works of ancient and modern writers, and having collected directly and personally numerous observations, in order to render account of the action of forests on the *régime* of running waters, M. Becquerel sought to ascertain what might be the influence of woods on pluvial waters, leaving on one side all preconceived theories and ideas on the causes which intervene in the fall of rain. It is to observation and experience that he appeals as the sole means of solving this very complex question. The Academy of Sciences has seconded him in this course; and with this aid he has been enabled to establish at different points of the arrondissement of Montargis five observatories, in each of which since July, 1865, daily observations have been made on the temperature of the air and soil, and the quantity of water falling under woods, at the borders, and at more or less remote distances in the plains. These observations are not yet sufficiently numerous to enable formal and definitive conclusions to be drawn from them; but while waiting for facts to accumulate with years, it is not without interest to give a sketch of the first results which have been indicated. In discussing the observations collected in the period which elapsed between July, 1865, and April, 1866, and comparing them with observations made at Paris, MM. Becquerel have observed the fact that in this interval of eight months rains have been more abundant in wooded places than in unwooded places, the difference being estimated at 2.5 per cent. Will it be the same in the long run? Time alone can reply, as at present MM. Becquerel have only given us the results of their first observations. MM. Becquerel compared the quantities of water which fell in woods under oaks with the amount collected outside woods, in order to determine the portion of water retained by branches, according as they are furnished with or destitute of leaves; and this comparison established the fact that the quantity of water retained by branches is all the more in proportion as rain is less heavy. When branches had not lost their leaves the proportion of water which fell under trees was found to represent 47 per cent. of the quantity of water which fell outside plantations, while it was only about half when trees had lost their leaves. What becomes of water retained by branches and leaves? It is probable that the proportion which is not evaporated returns slowly through the medium of the branches and leaves, the trunks and roots of trees, into the soil and sub-soil, where it serves to feed the lower reservoirs. In the wooded places of the arrondissement of Montargis it was found that more water fell than in the naked localities; and it may be remarked that the first observations of MM. Becquerel accord on this head with data collected in Denmark by the Agricultural Institute of Copenhagen.

The form of questions intended to be proposed in connection with the official inquiry drawn up regarding the state of French agriculture has now been prepared. The division established for local inquiries by a decree of March 28, 1866, and according to which the territory of the empire was divided into only six groups, has been recognised as insufficient; and the superior commission has come to the conclusion that it was convenient to subdivide the groups in such a manner that each district explored should comprise only a small number of departements. A fresh decree has just carried the number of circonscriptions in connection with the official inquiry to twenty-eight. The increase in the number of circonscriptions has necessitated an augmentation in the number of members originally designated to form part of the superior commission of inquiry: the decree issued this month has provided for this augmentation. By the terms of this decree, and that of March 28, 1866, the superior commission comprises more or less distinguished gentlemen, including M. de Béhague, a landed proprietor, and member of the Imperial and Central Agricultural Society of France; M. de Boureville, councillor of State, and secretary-general of the Ministry of Agriculture, Commerce, and Public Works; M. Boussingault, member of the Institute, and member of the Imperial and Central Agricultural Society of France; M. Adolphe Dailly, landed proprietor, and member of the Imperial and Central Agricultural Society of France, &c. Each circonscription has a local president appointed, who will be assisted either by an inspector-general of agriculture, or by another representative of the department of agriculture, designated by a special decree. Printed copies of the official form of questions will be sent to the consultative chambers of agriculture, agricultural societies, and agricultural committees, with an invitation to respond in writing to all questions on which they may deem themselves able to furnish useful information. The *questionnaire* comprises the following heads:—Laws relating to the transmission of property; conditions of leases of property; capital and means of credit; wages and labour; manures and improvement of land; other charges on cultivation; processes of cultivation and croppings; drainage, irrigation, and breaking up of land; meadows and forage cultures; animals; cereals; food cultures other than cereals properly so called; industrial cultures; indigenous sugars and alcohols; vines; culture of fruit trees; silk production; proportion of cultures and cultivated products; circulation and sale of agricultural products; legislation and treaties of commerce; and general questions, which we may perhaps indicate more particularly on a future occasion. M. Henri Doniol has issued an instructive report on the prize of honour for the departement of the Vaucuse, in 1866. This high recompence has been awarded to M. Eugène Raspail de Gigondas in the Valley of the Ouvèze. M. Raspail le Gigondas has, it should be added, improved his property y capitalizing his profits and without having recourse to a oan. An important agricultural exhibition, organized by the ive cantons of what the French term *la Suisse Romande*, but pen to the animals and products of all Switzerland, and to e agricultural machinery of all nations, will take place at eneva, from August 31 to September 3. A sale by auction ill take place Sept. 1 and Sept. 3, and will offer an occasion f procuring some fine specimens of the Berne and Schwitz reeds. A sale of reproducers of the Durham breed will also ke place Sept. 7, at the working of the Marquis de Poncin's, Tears, in the Loire. On the occasion of the great apoleonic *fête* of August 15, the French Legion of onour opened its ranks to a certain number of cul-vators, public writers, and functionaries who had ren-red services to agriculture. M. Bodin, director of the rm-school of the Three Crosses, at Rennes, has been pro-oted to the grade of an officer. In a *brochure* entitled Where is Agriculture, and what does it wish for?" M. eyssier des Farges has occupied himself with some of the estions of the approaching *enquête*, cultivation in general, ricultural credit, vintage and sugar-producing operations, ir-gations, taxes, &c. The author has made a special study of ancial questions in their relations with rural industry; he is great partizan of agricultural credit. Arguing that the cul-or cannot directly approach the Bank of France, M. Teys-r des Farges shows that the assistance of intermediaries be-een the Bank of France and the cultivator is now reflected loans to cultivation which attain the enormous rate of 11 11½ per cent. The remedy for this, M. Teyssier des Farges nsiders, is the creation for agriculture of banking establish-nts similar to those existing for industry and commerce. is agricultural bank would carry out the affairs refused by e Bank of France, and which it is desirable to leave no ger in a suffering condition; this plan M. Teyssier des rges would develope and carry out with all necessary pre-utions. M. Teyssier des Farges also claims a better division the land tax in France, as he contends that there are now ral properties whose value has been doubled by railways, but e taxes of which are simply those of estates which have not acquired any plus value. Thus, such-and-such a house in Paris pays a tax of £80 for a revenue of £800, while some rural property producing the same revenue pays £180 of taxation. M. Teyssier des Farges further asks for a reduction of the registration duties levied on gifts, successions, sales, and exchanges of property, a simplification of legal proceedings, and an equality of taxation between moveable and immoveable values.—The Flemish breed of cattle, excellent with reference to its milking qualities, leaves something to be desired with reference to its aptitude for fattening. In order to or wrongly gives an important plus value to the cows of this breed. M. Vanbercolme, of Rexpoede, near Dunkerque (Nord), has not experienced these apprehensions. In 1855 he brought from England a bull and some Durham cows: he crossed the breed of the district with the English breed, and success responded to his hopes. Some Durham-Flemish beasts fed on good pastures have attained on his farm at the age of thirty months a weight of 14 cwt., and the milking qualities of the cows have not deteriorated.—An agricultural show, a rare event for Spain, has just taken place at Pampeluna. Sheep, which sustain a very large part in the animal wealth of Spain, were represented at the Pampeluna show by the principal breeds which now occupy the province of Navarre. Merinoes, which are of small size and have a fine short wool, are more diffused over the other provinces of Spain than Navarre. The Churra breed, which has a thick wool of average length, is particularly esteemed for its meat; it inhabits the centre and southern parts of the province; it is the most widely diffused of the three breeds and the most productive. The Lacha breed, which has rather a long wool, inhabits the north of the province on the southern spur of the Pyrenees, where it lives constantly in the open air. We may have something more to say on a future occasion about this Pampeluna show; it is something to observe some evidences of animation and vigour in the long-dormant agriculture of Spain.

MARLBOROUGH AGRICULTURAL ASSOCIATION.

The following prizes in connexion with the Marlborough District Agricultural Association were awarded after the sheep fair at Marlborough, on Wednesday, August 22:

SHEEP.

For the best pen of 100 sale ewes, good in tooth from a flock exceeding 300, or of 60 such ewes, from a flock not exceeding 300, 1st, a silver cup (the gift of Lord H. Thynne, M.P.), Mr. S. Waldron; £1 to the shepherd. 2nd, £4, Mr. R. H. Keable; 15s. to the shepherd. 3rd, £2 10s., Mr. W. H. Gale; 10s. to the shepherd.

For the best pen of 100 wether lambs, from a flock of ewes exceeding 300, or of 60 wether lambs, from a flock not exceeding 300, 1st, a silver cup (the gift of Lord C. Bruce, M.P.), Mr. W. B. Waldron; £1 to the shepherd. 2nd, £4, Mr. J. Shier; 15s. to the shepherd. 3rd, £2 10s., Mr. W. H. Gale; 10s. to the shepherd.

For the best pen of 5 ram lambs, £5, Mr. J. W. Brown.

For the best ram of any age, 1st, £3, Mr. C. Child; 2nd, £2, Mr. S. King.

For the best two-tooth ram, 1st, £3, Mr. S. King; 2nd, £2, Mr. C. Child.

HORSES.

For the best cart stallion (bred by the exhibitor), a silver cup (the gift of Mr. R. P. Long, M.P.), Mr. W. H. Gale.

For the best two-year-old cart stallion (bred by the exhibitor), a silver cup (offered by the Association), Mr. W. H. Gale.

For the best cart stallion (open class), £4, Mr. W. H. Gale.

For the best cart-mare and foal, 1st, £4, Mr. G. Wirdnam; 2nd, £3, Mr. Thos. Brown; 3rd, £2, Mr. W. Archer.

For the best two-year-old cart filly, £3, Mr. W. H. Gale.

PIGS.

For the best Berkshire boar, £3, Marquis of Ailesbury.

For the best Berkshire sow, £3, Marquis of Ailesbury.

For the best Berkshire sow and offspring (not less than 7 in number, and under 3 months old), £3, Marquis of Ailesbury.

Two extra stock by Mr. Fall.

The judges were Mr. J. H. Puckeridge, of Winterbourne Bassett; Mr. T. Fuller, Compton; and Mr. G. Butler, Tufton.

CALENDAR OF AGRICULTURE.

This month generally concludes the harvest. House the grain in barns, or build the crops in ricks; have thatch always ready to cover the ricks from damage. Beans will be the latest crop; tie the stems into sheaves, when cut by hand-sickle, with straw ropes, or with tarred twine, which may be preserved for years for the same purpose. Beans and peas require an immediate covering, as leguminous plants imbibe and retain much moisture.

Finish the dunging of clay fallows; cart stones and tiles to drains; scour ditches; repair, widen, and strengthen brooks and rivulets, and mix the excavations with lime for earthy composts. Lay well-prepared composts on grass lands eaten bare or mown, and on lucern, the surface being first scarified, and then roll it. This preparation raises the first crop of spring.

Sow winter vetches on good lands, and on inferior soils with fallowing and dung. Mix with beans or winter barley.

Fallow the stubble lands for next year's gree crops in the earliest-planted, as potatoes and beet root: the preparation retains the moisture and ver much expedites the works of spring, but only i dry warm lands under a benign climate.

Seed-furrow clay fallows and sow wheat in th end of the month. Plough grass leys for the sam purpose. Scuffle peas and beans, and turn grat tens; collect, burn, or remove the weeds an stones, and lay on dung if required. Plough wit one furrow, and sow wheat.

Pick hops: the flowers are cut off with scissors, placed in bins, measured and paid by a fixed rate, then carried to the oast, and dried, mostly with coke, and with some sulphur to impart a yellow tinge. The haulm of the hop plants is used for litter. Set the poles erect into a tapering cone and thatch to preserve for years.

Keep all live stock in good condition, especially the work-horses on clay farms for wheat sowing.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Mushroom beds may now be prepared, for those produced naturally if the month be showery.

Lettuces may be sown early for winter, and when fit to be transplanted ought to be pricked out into a roomy frame, in which to stand the winter. Some hardy sorts will endure the frosts, but in general the other sorts perish.

Cabbage for Spring: Plant the main stock in an open situation, the soil rich with manures, unless it be a new loam. All the brassicas thrive amazingly in fresh earths, far better than in old garden soil with manures in quantity or quality.

Spinach: The plants from seed should be thinned out to regular distances of two or three inches, that the plants may become stocky, and thinned again: the plants so removed are used for the table.

Turnips are thinned and hoed between the rows, being always sown in drills.

Sow salads again, if required.

Routine: Exterminate every weed, and bring each plot into that state of neatness and order that makes a garden appear a sober quiet picture during winter—more beautiful, perhaps, than of the rampant luxuriance of summer.

FRUIT DEPARTMENT.

Finish the planting of strawberry beds and rows with well-rooted young plants, which seldom fail. Better to have young stock raised in pots, and now transplanted with entire balls of earth attached.

Spread nets in front of fruit trees, to catch the falling fruits. Destroy wasps, by suspending bottles half filled with treacle-water among th branches.

FLOWER GARDEN.

Finish the clipping of box-edgings; remo greenhouse plants to their winter quarters; tran plant pinks from pipings, and also some har herbaceous plants. Then rough-dig or fork all t vacant parts of borders.

Weed and roll gravel walks when in a damp st after rains.

STATISTICS OF THE FLAX CR IN IRELAND, 1866.

Total extent of flax grown in Ireland in each of the fol ing years:—

	Acres.		Acres.
1851	140,536	1859	136,283
1852	137,008	1860	128,595
1853	174,579	1861	147,957
1854	151,403	1862	150,070
1855	97,075	1863	214,099
1856	106,311	1864	301,693
1857	97,721	1865	251,433
1858	91,646	1866	263,419

This return, which exhibits an increase of 11,986 acr the area under flax in 1866, compared with 1865, is publi in anticipation of the general abstracts, which will give acreage under the various crops, and also the number of stock, by counties and provincies. They will, I trust, be r for publication in the course of the ensuing month.

I do not apprehend that any difference of importance wi found between the acreage under flax here given, and t which will appear in the tables of the general abstracts of t crops now in course of compilation.

WILLIAM DONNELLY, Registrar-Gener

18th August 1866.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

The weather in most parts of England having been somewhat favourable, although showers of rain have been rather frequent, considerable progress has been made in harvest-work in the southern, western, eastern, and midland counties. In the north several large patches of land have been cleared of their wheats; still the harvest is by no means forward, but the continuance of a dry atmosphere would enable our farmers to secure the whole of their crops in the forward districts within a fortnight from this time.

As regards the productiveness of the wheats, we may observe that the crop is nearly, or quite, equal to an average in quality and fair in quantity. On some of the heavy soils the produce is quite equal to the most favoured seasons. Notwithstanding that the Directors of the Bank of England have reduced their quotations for money from 10 to 7 per cent., and that there is every prospect of a further reduction in the price of capital, the wheat trade has been in a most inactive state, and prices have given way 4s. to 6s. per quarter. This decline, however, has been chiefly confined to new qualities, which have appeared in full average abundance.

The barley crop is turning out very fine, indeed it is quite equal to last year; but as yet very little of the crop has been thrashed out. The trade has been tolerably firm, at late currencies, arising from the moderate nature of the imports from abroad.

Oats are likely to yield heavily. In all quarters, although there is a deficiency of straw, they have come down remarkably well. The immense importations of oats from the Continent, as well as Canada and Trieste, have had very little effect upon the value of the article, the decline being barely equal to per quarter. The imports from Canada have been mostly disposed of at from 19s. to 20s. per quarter. With very few exceptions the cargoes have been reported in a heated condition.

Both beans and peas will greatly exceed last season in quantity; indeed the crop of the latter kind of produce is by far the gest grown for some years. Apparently, therefore, prices likely to give way under the influence of a pressure of supply. The stocks of old beans and peas have been exhausted some time.

The advices from France state that, in the early part of the nth, owing to the rumours afloat to the effect that the crops d turned out deficient, some excitement prevailed in the demand for wheat, and that orders had been forwarded to the ious Black Sea ports for the purchase of 200,000 quarters wheat. Since then, however, the trade has become heavy easier terms. The heavy crops produced in America this r lead us to the conclusion that rather large quantities of eat and flour will be shipped to Europe towards the end of year, although there is still a wide difference between the e of produce here and at New York.

From some accounts we learn that the potato disease has e its appearance in various localities. We believe, however, that the losses up to this time have been trifling.

The turnip crop is looking well, and the growth of swedes, golds, &c., will be fully equal to last year.

he growth of apples appears to be nearly an average, but other kinds of fruit there is rather a serious deficiency.

he reduction in the Bank rate for money has had a beneficial ct upon the wool trade. Privately, English wool has commanded more attention, and fine fleeces have slightly advanced alue. The public sales of Colonial, at which 133,000 s will be brought forward, are progressing steadily, at 0½d. ld. per lb. more money for clean and scoured wools. Greasy qualities, however, have sold heavily, and it is supposed that, ng to the absence of the usual number of foreign buyers a the sale rooms, about 20,000 bales will be left over for next series.

he first cut of hay has been secured in fair condition. The ous markets have been steadily supplied, but the trade has a very inactive. New meadow hay has sold at from £3 8s. 4 5s.; old do., £4 10s. to £5 12s.; new clover, £4 to £5 old do., £5 to £6 6s.; and straw, £2 to £2 10s. per load. teady progress has been made in Ireland in securing the crops. The yield of most kinds of grain is represented as a fair average. Potatoes have shown very few signs of disease.

In Scotland, the cutting of wheat, barley, and oats has made only moderate progress, but it is stated, in well-informed circles, that average crops have been produced. Potatoes are looking remarkably well.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that the Metropolitan Market has been fairly supplied with beasts, and that most breeds have come to hand in improved condition, the transactions in them have been extensive. In the values of Scots, crosses, Devons, and Shorthorns, no quotable change has taken place; but inferior stock, arising in a great measure from the large arrivals from the Continent, has given way in value from 2d. to 4d. per 8lbs. Most of the French beasts have appeared in good saleable condition, and been disposed of at from 5s. to 5s. 2d. per 8 lbs.

The supplies of sheep have been good, and most breeds have come up to average weights. The mutton trade has ruled steady, at very full prices. A few superior Downs and half-breds have realised as much as 6s. 4d. per 8 lbs. The general top figure, however, has been 6s. per 8 lbs.

As the season is now over, there has been very little inquiry for lambs, the arrivals of which have been very moderate, and the latest prices were 5s. 8d. to 6s. 8d. per 8 lbs.

At one period calves produced rather more money, but the advance was not maintained. The ruling prices have been 4s. 2d. to 5s. 4d. per 8 lb.

In pigs only a limited business has been doing, nevertheless the quotations have been supported.

The imports of foreign stock into London were as under:—

	Head.
Beasts	14,927
Sheep	37,390
Lambs	7,176
Calves	2,969
Pigs	4,087
Total	66,549

COMPARISON OF IMPORTS.

Aug.	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
1865	16,536	54,333	6,727	3,287	8,251
1864	11,475	39,114	2,716	2,786	4,326
1863	9,502	34,937	4,125	4,327	4,108
1862	5,630	30,652	5,204	2,060	3,297
1861	6,581	32,210	3,176	1,874	3,718
1860	6,647	38,249	1,856	2,520	4,075
1859	6,502	29,175	3,308	3,254	1,805
1858	8,293	19,500	2,764	3,512	2,935
1857	4,692	21,215	1,760	2,661	2,322
1856	5,677	17,801	1,271	2,301	1,901
1855	5,341	22,605	984	2,484	3,476

The following return shows the aggregate number of stock exhibited in the great Metropolitan Market during the month:—

	Head.
Beasts	26,840
Sheep and Lambs	153,720
Calves	2,620
Pigs	2,560

COMPARISON OF SUPPLIES.

Aug.	Beasts.	Sheep and Lambs.	Calves.	Pigs.
1865	29,600	147,520	3,828	2,175
1864	29,420	154,300	3,426	3,046
1863	26,264	149,430	3,070	2,622
1862	24,072	154,920	2,354	3,012
1861	23,420	159,740	2,952	3,220
1860	22,290	151,500	3,346	2,070
1859	23,170	165,090	3,322	2,320
1858	26,915	151,530	2,127	3,510
1857	20,695	143,758	3,173	2,450
1856	21,271	147,250	3,354	2,875
1855	20,816	151,870	3,356	4,272

The supplies of home stock thus compared with the two previous years:

From—	Aug. 1864.	Aug. 1865.	Aug. 1866.
Lincolnshire, Leicestershire, and Northamptonshire...............	12,500	9,820	5,600
Other parts of England	3,700	3,000	2,000
Scotland	133	730	80
Ireland	297	520	162

The Comparison of Prices is as follows:—

	Aug., 1861.				Aug., 1862.				Aug., 1863.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Beef from .	2	10 to	4	10	3	4 to	4	10	3	4 to	4	10
Mutton ...	3	2 to	5	4	3	8 to	5	4	3	6 to	5	2
Lamb	5	0 to	6	0	5	0 to	6	4	5	0 to	6	8
Veal	3	4 to	4	6	4	0 to	5	0	3	4 to	4	8
Pork	3	10 to	4	8	3	8 to	4	10	3	6 to	4	6

	Aug., 1864.				Aug., 1865.				Aug., 1866.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Beef from .	3	4 to	5	0	3	0 to	5	6	3	8 to	5	6
Mutton ...	3	10 to	5	4	4	4 to	6	8	3	10 to	6	0
Lamb	5	8 to	6	8	6	0 to	7	0	5	8 to	7	4
Veal	4	0 to	5	0	4	2 to	5	4	4	0 to	5	4
Pork	3	6 to	4	6	4	0 to	5	0	4	0 to	5	0

In most parts of England the pastures have been tolerably full of grass for the time of year. The stock, therefore, has fared well, and the outlay for artificial food has been very moderate. The supplies of meat on sale in Newgate and Leadenhall markets have been very moderate. Prime beef and mutton have moved off steadily at full quotations. Otherwise the trade has been heavy on easier terms. Beef, from 3s. 6d. to 5s.; mutton, 2s. 8d. to 5s. 8d.; lamb, 5s. 8d. to 6s. 8d.; veal, 4s. to 5s. 2d.; pork, 4s. to 5s. per 8 lbs. by the carcase.

LINCOLNSHIRE.

Throughout the length and breadth of this county the agriculturists and the public generally are anxiously looking forward to the next week or two with considerable attention; indeed, that particular attention is directed to the harvest just now cannot be wondered at, on account of the past fortnight being so very wet, sunless, and gloomy. Farmers themselves were, as usual, complaining loudly about the state of things; and this year they really have had good grounds for apprehension of danger to their crops, which up to the end of July were of the most promising description—indeed this county looked lovely. The farmers may well look forward to a good harvest with great anxiety, after the deficient one of 1865, and the crisis they have had to pass through with the cattle plague, which still appears lingering about. There is a change in the weather since Tuesday, with a prospect of a continuance of such; and, from the writer's own knowledge, from north to south of this county, he asserts no real damage has to this time occurred to any description of grain beyond the usual one in wet seasons, *i. e.*, that of carting it from the field before it is ready, of which that class of farmers are too numerous; but it is quite likely the quality of each sort of corn may have suffered somewhat from rain, and, becoming lodged, much of it may have a larger amount of tail corn to the acre than would have been the case had the past three weeks been dry and fine. But on a close inspection of a large district around, the writer feels quite justified in asserting that the public or consumer of food need be under no alarm should we have ten days of real summer weather; neither need they fear the soundness of the grain, for, with the exception of a discoloration, two of the most important sorts of grain, wheat and barley, remain (so far as grinding and germinating properties are concerned) quite perfect and uninjured, and are good, fair, average crops, exceeding their predecessors. Beans are good, with a large quantity of straw, without a corresponding amount of yield it is to be feared. Oats vary, and are somewhat generally below an average. Tares are plentiful, but sprouted. Peas are a great crop. Green crops of all sorts are looking beautiful, and promise well for winter food for sheep and cattle. Altogether, Lincolnshire never had a fairer and brighter aspect than in the summer of 1866.—Aug. 24.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BODMIN FAIR.—There was a rather small supply of sheep and lambs. The prices were—Sheep 7d. to 7½d. per lb., shorn lambs 8d., in the wool 9d. per lb. There were some horses, but no cattle.

BOSTON SHEEP MARKET.—A very small show of sheep and lambs, prices about the same as last week. The pig market was tolerably well supplied, at dear prices.

BRACKNELL FAIR.—Store tegs and lambs and stock ewes made very advanced prices. The horse show was small and trade dull, and there was an active business for pigs, which sold at high prices.

BRIDGNORTH FAIR.—There was a good show of fat sheep and lambs, and the attendance of dealers was considerable. Sheep sold readily at fully 9d. per lb., and fat lambs realised 28s. to 33s. each. Pigs were worth £3 to £3 5s. each; and good porkers sold at from 30s. upwards. In the horse fair there was a poor show: best agricultural horses from £25 to £30. Hacks from £5 to £15 and dull sale. Wool was sold by several parties at 1s. 9d. to 1s. 10d. per lb.

CARLISLE FAIR.—There were scarcely so many lambs shown as last year, the number being about 20,000. In quality they were quite equal to last year's show. The attendance of buyers was very meagre. The prices asked for Cheviots were from 16s. to 24s., an advance of 1s. to 2s. upon last year. For half-breds also a higher price was asked. The prices ranged from 28s. to 35s.—from 4s. to 5s. more than last year. The most marked difference in prices was in crosses, sellers demanding from 25s. to 30s. a head. Last year they sold at 19s. 6d. to 25s. a head.

GREAT HAREWOOD HORSE FAIR.—Those offering were mostly strong agricultural horses and roadsters, which averaged in price from £14 to £30. There were a few good carriage horses, which sold at from £21 to £27. Ponies were a tolerable show, and some changed hands at £1 or £19.

HUNTLY FAIR.—Sales were exceedingly stiff, and little business was done, the best lots all leaving the market unsold. Annexed are a few sales: Mr. Jessieman, Bowmanhill, sold a quey at £25; Mr. Bruce, Banks, a quey at £18 5s.; Mr. Tarbet, Wedderburn, three queys at £18 10s. each; Mr. Anderson, flesher, Dufftown, six queys at £18 each; Mr. Cran, jun., Lesmurdie, three queys at £16 each; Mr. Cooper, Ternemny, a stot at £20 10s.; Mr. Fettes, Howbog, five queys and four stots at £21 each.

IRVINE HORSE FAIR.—The supply was a fair average. Very few of a first-class character met with a ready sale, some of which ranged as high as £40. The greater number, however, were of a second-class description, prices ranging from £15 to £30.

KINGUSSIE FAIR.—The market was dull, and prices ruled high. Mr. Stewart, Biallid, sold shot lambs at 10s. 6d.; Mr. Stewart, Lynchlaggan, sold a lot of blackfaced lambs 13s. 6d. each; Mr. M'Edward, Wester Inveruglas, sold h crock ewes at £22 per clad score; Captain Menzies, C Bridge, bought the Strone top wedder lambs at 14s. each; Malcolm Clark, Achlean, sold a fine lot of wedder lambs at 1 each; Mr. Macpherson sold a mixed lot at 19s. 6d.; Mr. Donald Macpherson sold a mixed lot at 15s. 6d.; Mr. Grant, cattle-dealer, Carr-Bridge, sold a lot of top ewe lambs at £21 per clad score.

KNIGHTON FAIR.—Of sheep there was a great number penned, which fetched high prices; but not quite so dear a previous and neighbouring fairs. Good cart horses sold well but there were not many of this class in the market. Those which were offered easily changed hands at good prices. Pigs were not so dear as they have been at recent fairs.

LANARK LAMB FAIR.—The show was the larg that has been seen at Lanark Second Fair—the number offer being estimated at about 25,000. The market was tremely stiff for mostly all kinds, and many holders were luctantly forced to make considerable concessions on the pri originally asked by them before they could effect sales. F black-faced ewe lambs there was probably the best sale, th being a good demand for these for breeding purposes from northern counties. Black-faced wether lambs were a perf drug, and dealers in several cases lost from £1 10s. to £3 per score on the lots which they sold.

LERWICK FAIR.—There were no prime lots, and the few fed animals were held at exorbitant prices, generally at near 70s. per cwt. In ponies, a little more was done than in cattle, but there were nothing but mares shown; and these realised from £5 to £7 each.

LINCOLN FAT STOCK MARKET.—A small show of sheep, and prices up, best qualities making fully 8½d. per lb.

LINCOLN LAMB FAIR.—Rather a small show, thought to be owing to a rumour that the fair had been prohibited. Lambs from 35s. to 43s. a head. Ewes were up to 53s. Trade slow.

LUDLOW FAIR.—The supply of sheep was greater than at almost any previous fair. There were more sheep shown than could be penned. Dealers were numerous, but business was slack. The ewes were mostly Shropshire Downs, but several pens of Dorset ewes and lambs excited a good deal of attention. The prices averaged from 50s. to 58s. Fat sheep were a trifle lower, as were also store pigs. There was a tolerable supply of horses, and good draught animals sold readily at fair prices, one animal of superior merit fetching £50.

MARLBOROUGH LAMB FAIR.—The supply was unusually large. Trade ruled very dull, and sales could only be effected where sellers were willing to submit to a considerable reduction, and prices may be quoted 3s. to 4s. lower than at previous fairs. There was a tolerable show of horses, both for agricultural and general purposes, which met with a very dull trade. Good lambs made from 35s. to 41s., ewes 40s. to 52s., and we hear that Mr. Pierce Brown refused 65s. for one prime lot of ewes.

MINTLAW MONTHLY MARKET.—Lambs ranged from 29s. to 32s.

MONZIE LAMB MARKET.—Prices for the best lots ranged from 5s. to 6s. per head below the rates of last year, and inferior lambs sold at from 1s. to 2s. each cheaper. The stock consisted chiefly of blackfaced lambs, and in regard to condition was of less value than at the corresponding fair last year. It was nearly mid-day before a single sale was effected, owing to the high prices asked; in fact, the market was dull and stiff throughout. The Dall lambs, Lochtayside, were sold to go to Damside, Kinross-shire, at £12 10s. per clad score, and were the best in the market. Mr. M'Call, Dunblane, bought the Glenartney blackfaced lambs (shotts) at £5 per clad score. Mr. Peter M'Craw, Connachap, sold his blackfaced wether lambs at 7s. 6d. per head. Mr. James Stewart, Glenquoich, sold a lot of blackfaced lambs at 9s. 6d. each, and a lot of shotts at 4s. 6d. Mr. John M'Callum, Hosh, sold his cross-bred lambs to Mr. Stirling, Panholes, Blackford, at 10s. per head, and a lot of blackfaced lambs to Mr. Gow, Cairns, Muthill, at 8s. 3d. each. Several lots of blackfaced lambs sold at rates varying from 4s. to 7s. each. The best lots of cross-bred lambs were not sold; and when the afternoon was well advanced, a large portion of the stock was driven off the stance. Some lots of Cheviot hoggs, for which £2 2s. each was asked, also did not find purchasers; and, altogether, the market was the worst which has occurred for a long series of years.

OLD RAYNE FAIR.—Good fat beasts met a ready sale at 70s. per cwt., second quality selling at from 60s. to 65s. In all other classes of stock very little business was done, lean beasts being almost unsaleable. The number of sheep on the stance was larger than for several years past. Trade was dull, and prices considerably lower than they have been for some time back. Good mutton sold at from 7d. to 8d. per lb., lamb at 8d. to 9d. A considerable proportion of the sheep left unsold.

SETTLE FAIR.—Owing to the cattle-plague regulations cattle were excluded, and the show therefore was confined to sheep and lambs. Of the former there were but few, but lambs were much more numerous than usual, and the attendance of buyers also being large, a good market was the result. Half-bred lambs fetched from 22s. to 27s. each, whitefaced ditto 23s. to 30s. each.

SKIPTON HORSE FAIR.—There has been but a thin show of good horses, but many buyers, so that all good sorts met a ready sale at extra prices. There was a moderate show of inferiors, and the demand very good, at good prices for any worth notice. An extra attendance of buyers.

IRISH FAIRS.—SPANCELHILL: Three-year-old bullocks brought £13, yearlings from £3 to £6, and two-year-old heifers from £12 10s. to £14. The sheep fair was large. Lambs ranged from 25s. to 32s., those of a good sort brought as much as 38s.; fat sheep brought £3, and some few a little higher. The horses were of a very inferior character, being chiefly farm horses, the highest price obtained was £17.—VIRGINIA: In the beef department there was a very moderate show, nor was the quality of the animals more than mediocre at best. Some coarse lots were left unsold. In the store cattle department the show was a full average, and the business of a very brisk nature; three-year-old bullocks may be quoted from £11 to £13 each, two-year-olds from £7 to £8 10s., yearlings from £4 to £6 each, three-year-old heifers rated from £10 to £13, two-year-olds from £7 to £9, yearlings from £3 to £5 10s. per head. Springers in fair supply and brisk demand; prices from £11 to £18 each. Strippers in small supply, from £7 to £9 10s. each. Of sheep and lambs the exhibition was tolerable, and the demand good; best mutton rated from 7d. to 8d., ewe 6d. to 7d. Nothing left unsold in this department. Lambs rated from 27s. 6d. to 34s. each. In the pig department bonnives may be quoted from 12s. 6d. to 18s. each. The horse supply was good for the agricultural kind, at £12 to £20.—BALLYHEAN was well supplied. Milkers and springers in demand, fetching from £10 to £17; two-year-old heifers averaged from £7 7s. to £10; yearlings, £4 to £8. The sheep fair was pretty well supplied; yearling and two-year-old ewes of good quality from 40s. to 50s.; lambs from 25s. to 35s.—ARDEE: The best lots of fat cattle brought from £3 to £3 7s. 6d. per cwt.; second-class, from 56s. to 58s.; and inferior from 47s. 6d. to 50s. per cwt. No lots of good beef were sent away unsold, and very few of a second-class character appeared without a purchaser. In the store cattle department there was a tolerable supply. Three-year-old bullocks from £12 to £14 10s. each; two-year-old do. from £8 to £10 per head; year and a-half do. from £6 to £8; yearlings from £4 10s. to £6 per head. Three-year-old heifers from £11 to £14 each; two-year-olds from £8 10s. to £10 10s.; yearlings from £4 to £6 each. Good springers fetched from £15 to £18 10s.; others from £11 to £13 per head. Of sheep the supply was ample; the demand good. Good wethers on the foot brought from 7d. to 8d.; ewe and inferior mutton, 6½d. to 7d. Lambs ranged from 30s. to 40s. each. In the swine fair an average supply; best heavy stores went at 3 gs. a-piece. Slip pigs or runners went from 30s. to 38s. Bonnives, 15s. to 25s., according to breed and size. LOUGHREA: The demand for stock of all kinds was good. Three years old heifers brought £12 to £14 10s., bullocks say £1 under; two years old from £7 10s., and yearlings from £5 to £7. Sheep, ewes from £2 to £2 15s., wethers about the same, and lambs were from £1 to £1 15s. For horses there was a brisk demand at greatly improved prices, fully double what could be obtained this time twelvemonths.—MOYVORE: There was a very fine show of stock. Beef 56s. to 60s. per cwt. for best, 50s. to 55s. second-class. Milch and springer cows scarce and dear, supply not equalling demand; £12 to £20 per head freely given. Store cattle sold very high; three years old bullocks £15 10s. to £17, heifers £14 to £15 5s., two years old bullocks £14 to £15 5s. for best lots, heifers £11 10s. to £13 5s., yearlings £6 10s. to £9 for good bullocks. Young dry cows sold at from £9 to £14 each; weanling calves sold from £3 10s. to £5 5s. each; some of these cost from £2 10s. to £3 3s. each when imported. Sheep, wether mutton, 7½d. to 8d. per lb., ewe 7d., lambs 32s. to 40s. each. No fat pigs; stores 30s. to 50s., slips 14s. to 20s. each.—KINSALE: There was a good supply of all kinds of stock, but a manifest reluctance prevailed on the part of buyers to make any advances. The demand was in consequence very dull. Yearlings realized from £7 to £9, springers £10 to £12, and milchers £12 to £15 each. Fat cattle was scarce, and we are not able to state the quotations.—DROUMAGH: The show of fat and store cattle was fair, prices generally steady. The sheep and pig markets were largely attended. Mutton ranged from 7½d. to 8d. per lb.; pork from 52s. to 56s. per cwt.; beef from £3 to £3 3s. per cwt. The demand was very brisk: one gentleman, Mr. Leslie O'Callaghan, of Killeenleagh, disposed of 16 downs at £2 12s. a piece, also 20 lambs at 35s. Mr. Thomas Conway, purchased 3 heifers for £49 10s., which shows an average of £16 10s. a head. Mr. Denis R. O'Callaghan sold a spring cow at £15 15s., which was one of the highest prices given. Yearlings ranged from £4 to £6; springers £8 to £16; milch cows from £9 to £13.—SLIGO: Of beef there was a good supply, and met with a ready sale at from 75s. to 80s. per cwt. for prime: three-year-old bullocks sold from £16 to £18; Sir Robert Gore Booth M.P., refused £20 a head for a lot of twenty three-year-old bullocks; two-year-old brought from £12 to £14. Milch cows were in good demand, and ranged in prices irom £14 to £17. Springers were selling at £13 to £16. Fat sheep sold at from 50s. to 60s., and from 7½d. to 8d. per lb.; lambs from 35s. to 40s. The horse fair was supplied better than for some time, very few changed owners for the high prices demanded. —Navan: Beef of good quality was 68s. per cwt.; second-class, 60s.; coarse from 50s. upwards. Store Cattle—Three-year-old bullocks brought from £13 to £16 each; two-year-olds, from £8 10s. to £11; yearlings in poor demand, ranging from £4 10s. to £6 each. Three-year-olds heifers rated from £12 to £14 10s. each, an odd one brought £15 10s.; two-year-olds, from £9 to £10; year-and-a-half-olds, from £7 to £9; yearlings, from £4 to £7, according to merit. In springers and milk cows a good business was done for the English and Dublin markets, at prices ranging from £16 to £24 each; inferior, from £11 10s. upwards. Of sheep the supply was extensive. Good wether mutton, 8½d. per lb.; ewe ditto, from 6½d. to 7½d. Little left unsold. Lambs ranged from £1 8s. to £2 each. In the swine fair there was little done, although the show of small pigs was extensive. Stores met an active demand at from £1 15s. to £2 10s. each.

PRICES of BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—	s.	s.	CHEESE, per cwt.—	s.	s.
Friesland	112 to	114	Cheshire	72 to	84
Jersey	90	104	Dble. Gloucester	74	78
Dorset	116	120	Cheddar	76	84
Carlow	—	—	American	66	74
Waterford	—	—	HAMS: York	90	100
Cork	—	—	Cumberland	90	100
Limerick	—	—	Irish	90	100
Sligo	—	—	BACON:—		
Fresh, per doz., 11s. 0d. to 13s. 6d.			Wiltshire	78	82
			Irish, green	70	74

ENGLISH BUTTER MARKET.

LONDON, Monday, August 27.—All the fresh Butter has gone up 1s. per dozen with us this morning. The general market is dull, and prices barely so good,

Dorset, fine	118s. to 120s.	per cwt.
Devon	108s. to 112s.	„
Fresh	12s. to 15s.	per dozen lbs.

CORK BUTTER EXCHANGE, (Saturday last.)—The supplies continue heavy, averaging 2,000 firkins daily, and the week ended to-day with a brisk demand, without much change in price. Since Monday firsts fell from 115s. to 113s., seconds from 110s. to 109s., and fourths from 96s. to 94s. Should the receipts fall off during the harvest week, as they did at the same time last year, higher prices are confidently expected. The supplies of mild cured butter average 80 firkins daily. It quotes to-day from 112s. to 119s.

GLASGOW, (Wednesday last.)—The arrivals of cheese were large, with a full demand for prime, at full rates of last week. Second-class difficult to sell, and a considerable number of parcels left over. About 40 tons passed the weigh-house scales. Dunlop new 62s. to 66s., Cheddar-made new 66s. to 70s., skim-milk 27s. to 29s. per cwt.

NEWGATE AND LEADENHALL POULTRY MARKETS.—Geese 6s. to 7s., goslings 6s. to 7s., ducks 2s. to 3s. 6d, tame rabbits 1s. to 1s. 8d., wild ditto 10d. to 1s. 6d., pigeons 6d. to 8d., hares 2s. 6d. to 3s., grouse 1s. 9d. to 2s. 3d. each; Surrey fowls 9s. to 11s., ditto chickens 5s. to 8s., barn-door fowls 4s. to 6s. per couple. English eggs 9s. to 10s., French ditto 7s. to 8s. per 100; fresh butter 1s. to 1s. 2d. per lb.

ENGLISH WOOL MARKET.

CITY, Monday, Aug. 27.—Since our last report, the transactions in home-grown Wool have been on the increase, and very full rates have been realized for all descriptions. The further reduction in the Bank rate for money has given greater confidence to buyers generally. The supply of Wool on sale is only moderate.

Current Prices of English Wool.

			s.	d.		s.	d.
Fleeces—	Southdown hoggets	per lb.	1	7½	to	1	8
	Half-bred ditto	„	1	9½		1	10½
	Kent fleeces	„	1	8		1	9
	Southdown ewes and wethers	„	1	7		1	8
	Leicester ditto	„	1	7		1	9
Sorts—	Clothing	„	1	6		1	10½
	Combing	„	1	5½		2	0

BIRMINGHAM WOOL SALES.—The attendance was but moderate, and competition, except for choice parcels, was not brisk. Downs, Cheviots, and low fleeces still appear but little in request, and most lots of those descriptions were withdrawn. The following quotations of prices are obtained from Messrs. Nossiter's circular: Fleece wools—tegs 22½d. to 24½d. per lb., wethers 18½d. to 21¾d., mixed clips 20½d. to 24¼d., Downs 16d. to 18½d., Cots 18¾d.; skin wools—combing 19d. to 21d., carding 12½d. to 15½d., supers 18½d. to 19½d., fine 16½d. to 17½d., broad head 9d. to 11¾d.

BRADFORD WOOL MARKET, (Thursday last.)—The relief granted by the Bank of England last Thursday has not provoked much activity in the wool market. Comparatively little has changed hands during the week, and this morning's market opened with a decidedly quiet tone. The further reduction in the rate of discount to 7 per cent. has given a rather more cheerful aspect to things, but even now there is no buoyancy, and buyers are very temperate in all their transactions. The effect upon prices has been to give a little firmer tone, with more regularity. Cheap lots are not to be met with now, and holders are both better able and more disposed to keep their stocks till an improved demand shall arise. There is still a vast quantity of wool which has yet to reach this market, and growers' prices are not such as to tempt our staplers, with the present sluggish demand, to buy at all freely. A favourable harvest and cheaper money may improve the demand, but any advance in price will probably be gradual.—*Bradford Observer.*

LEEDS (English and Foreign) WOOL MARKETS, Friday.—There is a firmer tone in the English wool market since the reduction in the Bank rate, but there is no material alteration in prices. After the experience of late years, buyers shrink from laying in heavy stocks at extrme rates. There is a moderate demand for colonial and other clothing wool, and for some sorts better prices may be obtained.

LEICESTER WOOL TRADE.—No improvement has taken place since last week, although the reduction of the Bank rate to 7 per cent., and other favourable circumstances, were expected to produce some animation; their only effect, however, has been a little more confidence, and preventing any further decline in prices. Fleeces worth 48s. to 50s.—*Leicester Mercury.*

YORK WOOL MARKET.—There were between 500 and 600 sheets of wool pitched. There were only few buyers in attendance, but, owing to the relaxation in the rate of discount, trade had a more favourable appearance than at the last market. Prices showed little or no variation, and it was not until after telegrams had been received from Bradford market that any brisk transactions took place, when about 200 sheets of first-class wool found purchasers. The next wool market will be held this day fortnight, on the same day as the fortnightly sheep market.

BRESLAU WOOL REPORT, August 23.—If traders would be as healthy as trade, we might have enjoyed a very happy period of business; but, unfortunately, the reign of the cholera disease, though lately diminishing, has withheld a great number of foreign purchasers from visiting our place. Nevertheless, a decided briskness has prevailed both in demand and prices, and greater transactions were only checked by insufficient choice or exaggerated demands on the part of owners. The whole amount of sales arose to about 3,000 cwts., consisting chiefly of the finer descriptions, at from 80 to 95 thalers, which have been acquired for Netherland, English, and French account, at an advance of 15 to 20 per cent. above June Fair quotations. Inferior qualities continued in equally good request, and realised at from 55 to 75 thalers, home manufacturers and commissioners being the buyers. Fresh imports during the same period about 4,000 cwts.; most part from Poland and Russia.—Gunsburg Brothers.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

August commenced very cold and rainy, with frequent stormy winds, which, though they partly laid the crops here and knocked them sadly about in Scotland, certainly helped the drying process, so that there was comparatively little injury by sprouting. The third week brought really fine summer weather, and every advantage was taken of it to get the wheat in the midland and southern counties into the stack or barn; while the northern district rejoiced in the hope that the long-delayed process of ripening had really arrived. Much new white wheat has already been brought to the London markets from Kent and Essex; but it appeared not only to want colour and condition, but also strength; and millers who took the first samples readily have become very reluctant buyers, and a fall of fully 5s. per qr. from the starting prices has taken place, while old samples have given way 2s. per qr. There are varying accounts of the yield, and we must wait to be more assured of the result; but as yet neither weight, colour, nor produce seems up to the average of seasons, and some lots have been sent to market more like grains than merchantable corn. Politics have settled into calm, the rapid success of Prussia having left Austria no alternative but peace on humbling terms, and there will therefore be no impediments to the course of industry and commerce. While English markets have been thus declining, those in France have been taking a contrary course, from a general belief that the yield in that country proves 25 per cent. below an average; but Paris has lately felt the influence of fine weather and low prices here, and will probably come nearer to a level with Great Britain, as during the advance free purchases of foreign (chiefly Russian) were made in London for the northern ports. Belgium has hitherto followed France. Germany has had such rough weather that some of the new crop from the interior will not weigh over 54 to 60lbs. per bushel; while a prohibition to the export of maize and barley in the Danubian Principalities shows no dependence is to be placed on that quarter, even for low-quality wheat. Russian prices have hardened under all these circumstances; but America, with accounts as variable as were the necessitudes of the late war —first bad, then favourable, then bad again, with a rapid rise in prices at New York—at last leave the impression that the first reports were most correct, and show that no dependence can be placed on imports thence. The farming interest in this country has indeed suffered enough of late years to force growers into early sales; but we think that those who gather their produce in fine condition will yet be better paid by waiting. The following prices were recently current at the several places named: Red wheat in Paris has been selling at 54s. to 57s. per qr., white 55s. to 59s.; red Baltic at Antwerp 55s.; Liege quoted 55s. 6d., home produce at Louvain 54s.; Mecklenburg, Saale, and Marks, red, at Hambro' 52s.; fine high-mixed, extremely scarce, at Danzic 56s. to 57s. per qr. free on board; red at Cologne 49s. to 50s., at Stettin 46s.; white Spanish, afloat, 52s.; Ghirka, also afloat, 45s. to 49s.; spring wheat in Montreal, 40s. per qr.; at New York it was 45s. to 53s.; red winter 58s. to 66s., fine new white 55s. to 72s. per qr. of 480lbs.

The first Monday in Mark Lane commenced on moderate English and fair foreign supplies of wheat. The show of samples during the morning was about an average, and consisted almost exclusively of old qualities. Business was in calm, and though the previous week had been unsettled, there was no improvement in prices. The business of the day consisted chiefly of purchases of foreign, millers having reduced their stocks by holding off, and full prices were made of favourite sorts. There was a fair demand for floating cargoes, at quite former rates. The country trade was almost in suspense, from the variableness of the weather, but the tendency of values was generally upwards, and an advance of 1s. per qr. was made at Ipswich, Rochester, Wolverhampton, Leighton Buzzard, Fakenham, Didcot, Devizes, and Derby; but Liverpool was no dearer. At Leith, also, 1s. per qr. improvement was realized; while Glasgow only experienced a better trade. The broken weather seemed to have little effect in Ireland. More new corn was appearing at Dublin, but the price of old was no better.

On the second Monday both the English and foreign supplies were less than in the previous week. The show from Kent and Essex was moderate, including some new samples of but inferior quality, though some fine white Kentish brought 58s. per qr.; old sold at unaltered rates. The foreign trade was very firm, and in some cases there was rather more money paid, accounts being very unfavourable in France. Cargoes afloat were quite as dear as on the previous week. The weather was again very showery this week, but not sufficiently so to raise prices generally, though several places were rather dearer, as Maidstone, Bury St. Edmunds, Birmingham, and a few other towns; but Liverpool was only quiet all through the week. Both Edinburgh and Glasgow were firm, but not dearer. Dublin was well attended, and holders of foreign asked 6d. to 1s. per qr. more money, but nothing was done at the advance. Rain fell at intervals through the week, and hurried farmers in the carrying of their wheat; so that many samples were got-up in poor condition, and in a few instances there was some sprouting, but on the whole not enough to stir the trade, though at a few markets there was an advance of about 1s. per qr. This was the case at Birmingham, Boston, Bury St. Edmunds, Bristol, Ipswich, Maidstone and a few other places, there being a general firmness in prices throughout, as was noted at Hull and Liverpool. Edinburgh and Glasgow were calm, and without change. At Dublin very little business was transacted, but holders of foreign were asking more money.

The third Monday's return noted an increased English supply, with a large arrival from the Continent. The show of samples from Kent and Essex was fair, including about 2,000 qrs. of the new crop, almost all white, and averaging about 62lbs. per bushel, though many lots were damp in hand. This may be called the first real day of business for new qualities, which at their first appearance brought extra prizes, as they generally do at this period of the year; and from these rates there was a decline of fully 2s. per qr., while old was 1s. per qr. cheaper to sell. The foreign trade was quite in suspense, and to have forced sales would have brought lower rates. Cargoes afloat were, however, 1s. per qr. dearer for fine qualities. The weather proving fine this week, where new wheat was exhibited in quantity, it was generally cheaper; but many markets had no samples to show. At these the value of old was little affected, though trade was dull, and prices tending to decline. Wakefield noted a reduction in new samples of 2s. to 3s., and 1s. on old. Liverpool was down 2d. per cental on Friday; and Hull had scarcely any business. Glasgow was in calm, and Edinburgh 1s. per qr. lower. Dublin, in the midst of splendid harvest weather, found sales extremely difficult, buyers waiting events, and apparently expecting a decline.

The fourth Monday commenced on the back of fair English supplies, with plenty of foreign wheat. The show of samples from Essex and Kent was good, a large proportion being new. There were but few fine and dry lots, the bulk having been hurried to market, from fear of the weather, and not having well ripened in the straw. Millers, therefore, till near the close of the market, held off, and then sales were made at a decline of 4s. to 5s. per qr., while old parcels sold but slowly, at a reduction of 1s. to 2s. per qr. The foreign trade was quite retail, at a decline of fully 1s. per qr.; but many holders were careless about selling, from a conviction that the weakness of the new wheat would soon create a large demand for mixing. Floating cargoes were dull, though not offered cheaper.

The imports into London for four weeks were 21,417 qrs. English wheat, 73,611 qrs. foreign; 15,035 qrs. English, 74,807 qrs. foreign in 1865. Exports 1,604 qrs. wheat, 88 cwts. flour.

The imports into the Kingdom for four weeks ending 18th August were 1,628,146 cwts. wheat, and 208,700 cwts. flour. The general averages commenced at 52s. 6d. per qr., and ended at 50s. 2d.; those of London began at 52s., and closed at 52s. per qr.

The flour trade, through the entire month, has been extremely inactive, but with little variation in prices; but the last Monday was fully 1s. per sack cheaper. Some arrivals have appeared from America—indeed, more than was expected from he relative state of markets; and the same may be said as respects French imports, the advance in France having lately been very rapid, though some reaction has appeared since the fine weather. To sell either immediately must lose money considerably: and to keep it in summer is dangerous. Norfolks were nominally 35s. per sack, and higher qualities in proportion. Town prices have continued as they were, with 50s. as the top quotation. No fine American is here, nor is it likely to come, being dearer at home. The imports into London were 57,179 sacks country sorts, 4,659 sacks 7,988 barrels foreign; against 53,905 sacks country-made, 2,174 sacks 19,105 barrels foreign, for the same time in 1865.

The barley trade has been on a limited scale through the month; but stocks and arrivals being very scanty, the tendency of prices has been upward, more especially for grinding foreign, which has now risen to 28s. per qr., and were it not for the free imports of maize, the advance must have been greater, but as that article hasbeen selling at 26s., and with 1s. advance can still be bought at 27s. for useful purposes, there is no great probability of a further rise, though exports from the Danubian Principalities have been prohibited, as well as of maize from the failure of the crops there. We shall soon be receiving enough of our own new crop to supply every demand. The new malting seems of fair quality as yet, and worth about 40s. per qr. The imports into London for four weeks were 869 qrs. British, and 13,994 qrs. foreign, against 855 qrs. British, and 12,168 qrs. foreign for the same period in 1865.

The malt trade all through the month has been slow, but prices have been without alteration.

Though the supplies of oats from the United Kingdom have been extremely short, they have been more than made up by immense arrivals from America and Russia, inasmuçh that there has been a constant reduction in such qualities of 6d. per qr. every market. Russian oats, weighing 38lbs. per bushel, have by this been reduced to 18s. per qr., and Canadians to about the same; but fine Swedish oats not being plentiful have scarcely been reduced 1s. per qr. through the month, those weighing 42lbs. per bushel being worth 25s. per qr. The supplies have chiefly gone to granary; and as old oats must be wanted, we should not be surprised at some reaction when the glut is taken off the market. The imports in London for four weeks have been 936 qrs. English, 163 qrs Scotch, 250 Irish, 467,657 qrs. foreign, against 1,594 qrs. English, 1,652 qrs. Scotch, 455 qrs. Irish, 271,643 qrs. foreign in 1865. As the French were lately very badly off for oats, and prices were very high, there have been fair exports from France, say 4,658 qrs.

Beans have been in very short supply through the month; but as the consumption at this time of year is not large, business has been limited, though prices for hard qualities for splitting have been well maintained. Some new from Egypt are now expected, and the Pacha may resume their cultivation as well as that of other grain, since cotton has fallen, and will not be required in such quantities. A fall in this pulse must be expected on good arrivals of the new crop in quantity. The imports into London for four weeks were 616 qrs. English, 5,325 qrs. foreign, against 1,937 qrs. English and 5,691 qrs. foreign in 1865.

The imports of foreign peas have been more liberal than of beans, Canadian having made good contributions; but as white old have been wanted for feeding, as a substitute for beans, prices have been about maintained, say to 38s. per qr., with a proportionate increase for the best boilers. The new peas brought to market have been of fair quality, and the whole crop is well spoken of. The imports for four weeks into London were 884 qrs. English and 10,360 qrs. foreign, against 1,076 qrs. English and 1,754 qrs. foreign in 1865.

The supply of linseed has continued scanty, and not enough to replenish the almost exhausted stocks, and prices, therefore, have been very firm, with a fair sale for cake all through the month.

There has been rather more doing in cloverseed of late at better prices, from an anticipated partial failure of the crop, both here and in France; but very little is left on hand to operate with, and the change to finer weather may check the movement. Canaryseed has been without interest. Rapeseed has become more steady. New winter tares have appeared, rather small in size, but well filled, and seem likely to commence cheaply, say at 5s. to 6s. per bushel.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR IN MARK LANE.

	Shillings per Quarter.	
WHEAT, Essex and Kent, white... old 41 54...new	40 to	50
,, ,, ,, red ...... ,, 41 48... ,,	40	47
Norfolk, Lincoln, and Yorkshire, red	40	47
BARLEY ....30 to 34....Chevalier, new	38	42
Grinding....29 31....Distilling	33	37
MALT, Essex, Norfolk, and Suffolk	59	68
Kingston, Ware, and town-made	59	66
Brown	52	56
YE	26	28
OATS, English, feed 20 to 25....Potato	24	30
Scotch, feed ....20 26....Potato	25	30
Irish, feed, white 18 21....Fine	22	26
Ditto, black ....18 20....Potato	23	27
BEANS, Mazagan ...41 43....Ticks	40	43
Harrow ....43 46....Pigeon	45	49
PEAS, white, boilers..38 41 Maple 39 to 41 Grey, new	36	37
FLOUR, per sack of 280lbs., Town, Households	47	50
Country, on shore 35 to 36 ,,	38	42
Norfolk and Suffolk, on shore	34	35

FOREIGN GRAIN.

	Shillings per Quarter.	
HEAT, Dantzic, mixed ......52 to 54......old, extra	57 to	60
Königsberg ....49 54....extra	55	56
Rostock ....50 54....fine	55	56
Silesian, red....47 51....white	50	54
Pomera., Meckberg., and Uckermrk. ...red old...	50	52
Russian, hard, 42 to 46...St. Petersburg and Riga	45	46
Danish and Holstein, red	44	45
French, none....Rhine and Belgium	50	52
American, white 00, red winter 50 to 55, spring	00	00
ARLEY, grinding 27 to 28....distilling and malting	35	39
ATS, Dutch, brewing and Polands 20 to 27......feed	17	22
Danish and Swedish, feed 19 to 24.... Stralsund...	20	24
Canada 18 to 19, Riga 18 to 24, Arch. 18 to 20, P'sbg.	19	25
ARES, Spring, per qr. ...... small 00 ...... large ...	00	00
EANS, Friesland and Holstein	37	42
Königsberg ....40 to 42...Egyptian, none	00	00
EAS, feeding and maple...36 38...fine boilers	36	39
DIAN CORN, white......29 30...yellow	27	29
LOUR, per sack, French..37 40...Spanish, p. sack	37	40
American, per brl......24 26...extra and d'ble.	28	30

COMPARATIVE AVERAGES.

	WHEAT.			BARLEY.			OATS.		
ears.	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
862...	33,844½ ...	57	4	1,045½ ...	32	3	2,142¼ ...	25	3
863...	48,673¾ ...	45	11	925½ ...	31	4	3,191 ...	23	7
864...	64,702½ ...	42	6	1,251½ ...	28	1	2,691½ ...	22	0
865...	45,752¾ ...	43	1	922½ ...	27	11	2,307¼ ...	23	10
866...	53,532¼ ...	50	2	591½ ...	34	9	1,233¼ ...	26	6

IMPERIAL AVERAGES

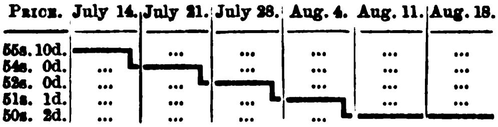
For the week ended August 18, 1866.

Wheat	53,532¼ qrs.	50s.	2d.
Barley	591½ ,,	34s.	9d.
Oats	1,233¼ ,,	26s.	6d.

AVERAGES

For the last Six Weeks:	Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.
July 14, 1866	55	10	35	1	27	7
July 21, 1866	54	0	33	5	26	2
July 28, 1866	52	0	33	10	27	1
Aug. 4, 1866	51	1	32	11	25	3
Aug. 11, 1866	50	2	35	2	26	6
Aug. 18, 1866	50	2	34	9	26	6
Aggregate Average	52	2	34	2	26	6
Averages last year	43	1	27	11	23	10

FLUCTUATIONS in the AVERAGE PRICE of WHEAT.



PRICES OF SEEDS.

LONDON, Monday, Aug. 27.—The inquiry for red seed for the Continent continues, but the advanced rates required by holders here prevents transactions at present. New English trefoil, with limited quantity offering, finds buyers at fully 1s. advance. New Rapeseed is a slow sale. New winter tares are in good supply, and at moderate rates.—Cutler and Barker, Seed-factors.

BRITISH SEEDS.

Mustard, per bush., white	8s. to	12s.
Canary, per qr	45s.	52s.
Cloverseed, red	00s.	00s.
Coriander, per cwt	00s.	00s.
Tares, winter, new, per bushel	5s. 6d.	6s. 0d.
Trefoil	18s.	20s.
Ryegrass, per qr.	00s.	00s.
Linseed, per qr., sowing 00s. to 00s., crushing	60s.	68s.
Rapeseed, per qr	54s.	58s.
Linseed Cakes, per ton	£9 10s. to	£10 10s.
Rape Cake, per ton	£5 10s. to	£6 0s.

FOREIGN SEEDS.

Coriander, per cwt	16s. to	20s.
Cloverseed, red 42s. to 50s., white	60s.	80s.
Trefoil	18s.	23s.
Ryegrass, per qr.	25s.	26s.
Hempseed, small —s. per qr., Dutch	00s.	40s.
Linseed, per qr., Baltic 58s. to 60s...Bombay	68s.	00s.
Linseed Cakes, per ton	£9 10s. to	£11 0s.
Rape Cake, per ton	£5 0s. to	£6 0s.
Rapeseed, Dutch	00s.	00s.
Carraway ,,	00s.	00s.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, Monday, Aug. 27.—The supplies of home-grown potatoes on sale are somewhat extensive. Generally speaking, the trade is steady as follows:

Shaws	60s. to 80s. per ton.
Regents	60s. to 110s. ,,

HOP MARKETS.

BOROUGH, Monday, Aug. 27.—Our market remains firm, with a steady consumptive demand; which, if continued, bids fair to clear off the remainder of last year's growth by the time the new crop reaches us. Two pockets of the latter have already been received, realizing the fancy prices of £16 16s. and £12 12s. per cwt. Accounts from the plantations are more promising; the weather has continued extremely favourable throughout the whole of last week, and both burr and hop are coming forward well. The strong and healthy bines have made great progress, but in sections of Mid and East Kent, where mould and lice abound, scarcely any improvement is perceptible; and the healthy bines, whether from the wet winter or the heavy crop of last year, are certainly deficient of fruit. Should congenial weather prevail, however, for the next fortnight, we may yet look for a fair yield, but nothing like last year's. Accounts from Europe are more satisfactory. There are signs of improvement in Belgium and Bavaria, and the frontier districts are also making good progress. The coming crop is estimated at half to two-thirds of last year's. New York advices to the 14th inst. report the market as quiet and firm. Blight in the hop sections appears to be on the increase.

Mid and East Kent...	105s.,	140s.,	180s.
Weald of Kent ...	100s.,	120s.,	140s.
Farnhams & Country	100s.,	125s.,	160s.
Sussex	90s.,	110s.,	140s.
Bavarians	130s.,	147s.,	170s.
Belgians	100s.,	112s.,	125s.
Yearlings	95s.,	110s.,	130s.

COVENT GARDEN MARKET.

LONDON, SATURDAY, August 25.

Pears still continue to be imported from France. Oranges are becoming scarce, as are also West India pine-apples, the last cargo of which for this season is said to have arrived. Home-grown pine-apples and hot-house grapes are still plentiful, and prices for these, as well as for other kinds of indoor produce, continue about the same as those of last week. Greengages are now making their appearance; but these, as well as best samples of other plums, are scarce, and are fetching high prices. Vegetables generally are sufficient for the demand. Flowers chiefly consist of orchids, asters, calceolarias, pelargoniums, fuchsias, balsams, cockscombs, stocks, mignonette, and roses.

FRUIT.

	s. d.		s. d.		s. d.		s. d.
Cherries, ℘ doz. lbs.	0 0	to	0 0	Melons, each	3 0		6 0
Currants, ℘ sieve ...	4 0		5 0	Nectarines, ℘ doz. ...	4 0		8 0
Figs, ℘ dozen	1 6		3 0	Oranges, per 100	12 0		20 0
Gooseberries, ℘ qrt.	0 3		0 6	Peaches, per dozen...	4 0		20 0
Grapes, ℘ lb.	2 0		6 0	Pears, kitchen, ℘ doz	0 0		0 0
Lemons, ℘ 100	8 0		14 0	Pine Apbles, per lb.	3 0		5 0
Nuts, Cob, per 100lbs.	0 0		0 0	Strawberries, per lb.	0 0		0 0

VEGETABLES.

	s. d.		s. d.		s. d.		s. d.
Artichokes, per dozen	2 0	to	4 0	Mushrooms, ℘ pottle	2 0	to	3 6
Asparagus, p. bundle.	0 0		0 0	Must. & Cress, ℘ punn.	0 2		0 0
Beans, Kid., ℘ ½ sieve	2 0		3 6	Onions, ℘ doz. bun. ...	3 0		6 0
Beet, per dozen	2 0		3 0	Pickling, per quart	0 0		0 0
Brocoli, per bundle ...	0 0		0 0	Parsley, per ½ sieve...	2 0		3 0
Cabbages, per dozen...	1 0		2 0	Parsnips, per dozen ...	1 0		2 0
Carrots, per bunch ...	0 4		0 8	Peas, per quart	0 6		1 0
French, per bunch,	1 0		4 0	„ per bushel	3 6		5 0
Cauliflowers, per doz.	2 0		6 0	Potatoes, York Regents, per ton	80 0		95 0
Celery, per bundle ...	2 0		2 6	Rocks, per ton	60 0		70 0
Cucumbers, each	0 3		0 9	Flukes, per ton	105 0		125 0
Endive, per dozen	3 0		0 0	Kidneys, per cwt.	6 0		10 0
Garlic & Shallots, ℘ lb.	0 10		0 0	Radishes, per 12 bund.	0 6		1 0
Herbs, per bunch	0 6		0 0	Rhubarb, per bundle	0 0		0 0
Horseradish, ℘ bundle	2 6		4 0	Savoys, per dozen	0 0		0 0
Leeks, per bunch	0 3		0 0	Spinach, per bushel ...	2 0		3 0
Lettuces, per score ...	1 0		1 6	Spinach, per bushel ...			
Mint, per bunch	0 3		0 4	Turnips, per bunch ...	0 6		0 9

TIMBER.

BALTIC FIR TIMBER.

Per load 50 cubic feet.

	s. d.		s. d.
Riga	65 0	to	67 0
Dantzic and Memel, Crown	75 0		85 0
Best middling	65 0		73 0
Good middling & second	55 0		65 0
Common middling	45 0		50 0
Small, short, and irregular	40 0		50 0
Stettin	45 0		55 0
Swedish	41 0		46 0
Small	37 0		40 0
Swedish & Norway balks	35 0		40 0

AMERICAN PITCH PINE.

United States	0 0	0 0

BALTIC OAK TIMBER.

Memel, crown	110 0	130 0
Brack	80 0	100 0
Dantzic and Stettin, Crown	90 0	120 0
Brack & unsquar'd	50 0	70 0

WAINSCOT.

Per log 18 cubic feet.

Riga, crown	95 0	110 0
Brack	70 0	80 0
Memel and Dantzic, Crown	75 0	85 0
Brack	55 0	65 0

DEALS AND BATTENS.

Per Petersburg standard hundred.

	£ s.	£ s.
Archangel & Onega	12 0	14 0
Seconds	9 0	10 10
Petersburg	10 0	12 0
Wyburg	9 0	9 10
Finland and hand-sawn Swedish	7 0	8 0
Petersburg & Riga white deals	8 10	9 10
Memel and Dantzic, Crown red deals...	12 0	13 0
Brack	8 0	9 0

	£ s.		£ s.
Christiana & Sannesund deals, white and yellow	12 0	to	13 0
Second do.	9 0		10 10
Dram & Frederickstadt battens, do.	8 10		9 0
Dram 6½-inch do. ...	7 0		8 0
Gothenb'g, gd stocks	9 10		10 0
Common	8 10		9 0
Gefle and Swedish 14-feet deals	9 10		10 10
Swedish deals and battens, long mill-sawn	9 0		10 10
Dantzic, cr'wn deck, per 40-feet 3-inch	1 0		1 6
Brack	0 12		0 18

LATHWOOD.

Per cubic fathom.

Petersburg	7 0	8 0
Riga, Dant., Memel, and Swedish	5 0	6 10

FIREWOOD.

Per cubic fathom.

Swedish, red deal ends	3 15	4 0
Norway, red & white boards	3 0	3 10
Rounds and slabs	2 15	3 5

OAK STAVES

Per mille pipe.

Memel, crown	150 0	205 0
First brack	130 0	160 0
Dantzic, Stettin, & Hambro' full-siz'd crown	150 0	180 0
Canada, stand. pipe	80 0	85 0
Puncheon, ℘ 1,200 pieces	24 0	25 0
Bosnia, single brl., ℘ 1,200 pieces	25 0	27 0
United States, pipe	30 0	55 0
Hogshead, heavy and extra	30 0	40 0
Slight	22 0	26 0

LEADENHALL LEATHER MARKET.

LONDON, SATURDAY, August 25.

The supplies of fresh leather on sale are moderate. On the whole the trade is steady at full currencies. Raw hides are steady in price.

CROP HIDES.

ENGLISH.

lbs.		lbs.	d.		d.
28	to	35	11½	to	14½
36		40	13		15½
40		45	12½		17½
46		50	14		18½
50		55	16		19
56		60	17		20

BUTTS.

ENGLISH.

		d.	d.
14	16	13	17
17	20	13	20
21	24	14	24
25	28	15	27
29	32	18	30
33	36	20	31

FOREIGN.

16	20	11	18
21	24	11½	20
25	28	11½	22
29	32	11½	24
33	36	12	26
36	44	12½	24
44	50	14½	25

OFFAL.

	d.	d.
English Shoulders	12	15
Do. Cheeks and Faces.	7½	10
Do. Bellies	9	12
Do. Middles do.	11	13
Foreign Shoulders	10	12
Do. Necks	8	10
Do. Bellies	8	10½
Do. Middles do.	10	12
Dressing Hide Shoulders.	10	12
Do. do. Bellies	8	10
Kip Shoulders	5	7
Do. Bellies	5	7

DRESSING HIDES.

	lbs.		lbs.	d.		d.
Common	20	to	24	11	to	13
Do.	25		28	11		13
Do.	30		34	11½		13
Do.	35		40	12		15
Saddlers'	30		35	13		16
Do.	36		50	15		17
Bulls				10		12
Shaved	14		16	14		16
Do.	17		19	13½		15½
Do.	20		23	13		14½
Do.	24		28	12½		14
Scotch do.	16		24	13½		16
Coach, per hide				23s.	to	30s.

HORSE BUTTS. SHAVED.

	d.	d.	d.	d.
English	11	13	13	15
Spanish	11	12½	12	14

HORSE HIDES.

	lbs.	lbs.	d.	d.
English	13	18	11 to	12½
„ without butts	9	14	11	14½
Spanish, salted, without butts, per hide	6	9	s. d. 10 0	s. d. 15 0
Do. do. do.	9	12	11 6	17 6
Do. do. do. inferior			7 0	10 0
Do. dry do.	6	8	8 0	11 0
Do. do. do.	9	11	10 0	14 0
Do. do. do. inferior			6 0	8 0

CALF SKINS.

Av. weight,	lbs.		lbs.	d.		d.
per dozen	20	to	30	22	to	32
Do.	30		36	22		32
Do.	36		40	22		32
Do.	40		45	22		32
Do.	45		50	21		31
Do.	50		60	20		30
Do.	60		75	18		27
Do.	75		90	17		23
Do.	95		110	15		21
Welsh, unrounded.						
Av. wght., p.doz.	25		35	18		24
Do.	35		50	17		22

KIPS.

	lbs.	lbs.	d.	d.
Petersburgh	4	7	16	21
Do.	7	9	16	21
Do.	9	10	15	19
Do.	11	12	14	17
E. I. drysalted...	5	7	20	25
Do. do. ...	7	9	18	20
Do. seconds			16	18
Do. thirds			12	15
Do. inferior			7	12

SHEEP SKINS.

Basils, unstrained, per lb.		11	20
Do. strained, per lb. ...		10	19
Do. facing, per doz.		7s.	22s.
White Sheep & Lambs	„	4	10
Do. strained	„	10	22
Do. aprons	„	10	25
Tan Sheep and Lambs	„	10	26
Sumach roans	„	16	35
Do. skivers	„	10	20
Bark skivers	„	10	20

SUNDRIES.

		s.	s.
Hog Skins, best	each	8 to	
Do. seconds	„	5	
Seal Skins, split, per dozen		40	
Do. for bindings	„	35	
Calf Skins, Sumach-tanned	„	0	
Do. white	„	30	
Horse Hides, white, each...		8	
Hide Splits, per lb.		7d. to	

MANURES.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the importers' stores, or ex ship (30 tons) £12 5s. to £12 10s. per ton.
Bones, £6 10s. per ton.
Animal Charcoal (70 per cent. Phosphate) £5 per ton.
Coprolite, Cambridge, whole £2 5s. to £2 8s., ground £2 15s. to £3
Suffolk, whole £1 18s. to £2, ground £2 10s. to £2 12s. per ton.
Muriate of Potash, £13 to £14 per ton.
Nitrate of Soda, £15 to £15 10s. per ton.
Sulphate of Ammonia, £14 to £15 per ton.
Gypsum, 30s. per ton. Superphosphate of Lime, £5 to £6 5s. per ton.
Sulphuric Acid, concentrated 1·845 1d. per lb., brown 1·712 0¾d.
Blood Manure, £6 5s. to £7 10s. per ton. Dissolved Bones, £6 15s. p. ton.
Linseed Cakes, best American barrel £11 5s., ditto bag £10 10s. p. ton;
English £11 to £11 10s. Rape Cake, £5 15s. to £6 per ton.

E. PURSER, London Manure Company,
116, Fenchurch Street, E.C.

	£ s. d.		£ s. d.		£ s. d.		£ s. d.
Guano, Peruvian	£12 7 6	to	£0 0 0	Linseed Cake, per ton—			
Do. Upper do.	6 15 0		7 0 0	Americ., thin, bgs.	£9 15 0	to	£0 0 0
Malden Island	0 0 0		0 0 0	Do. in brls.	0 0 0		0 0 0
Bone Ash	0 0 0		0 0 0	English	10 0 0		0 0 0
Brimstone, 2d&3rd	0 0 0		0 0 0	Cotsd. Cake, decort.	0 0 0		0 0 0
Saltpetre, Bengal, 2 per cent.	0 0 0		0 0 0	Linsd. Bomby, p.qr.	3 10 0		3 12 0
Nitr. of Soda, p. ct.	0 10 0		0 10 6	Rapeseed, Guzerat	3 0 0		3 3 0
Cloverseed, N.Am. red, new per cwt.	1 16 0		2 0 0	Niger	2 10 0		2 12 0
				Tallow, 1st P.Y.C.	2 6 0		2 7 6
				„ super. Norths	2 4 0		2 5 0

SAMUEL DOWNES AND CO., General Brokers,
Exchange Court, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk.

		£ s. d.
Prentice's Cereal Manure for Corn Crops	per ton	£8 10 0
Mangold Manure	„	8 0 0
Prentice's Turnip Manure	„	6 10 0
Prentice's Superphosphate of Lime	„	6 0 0

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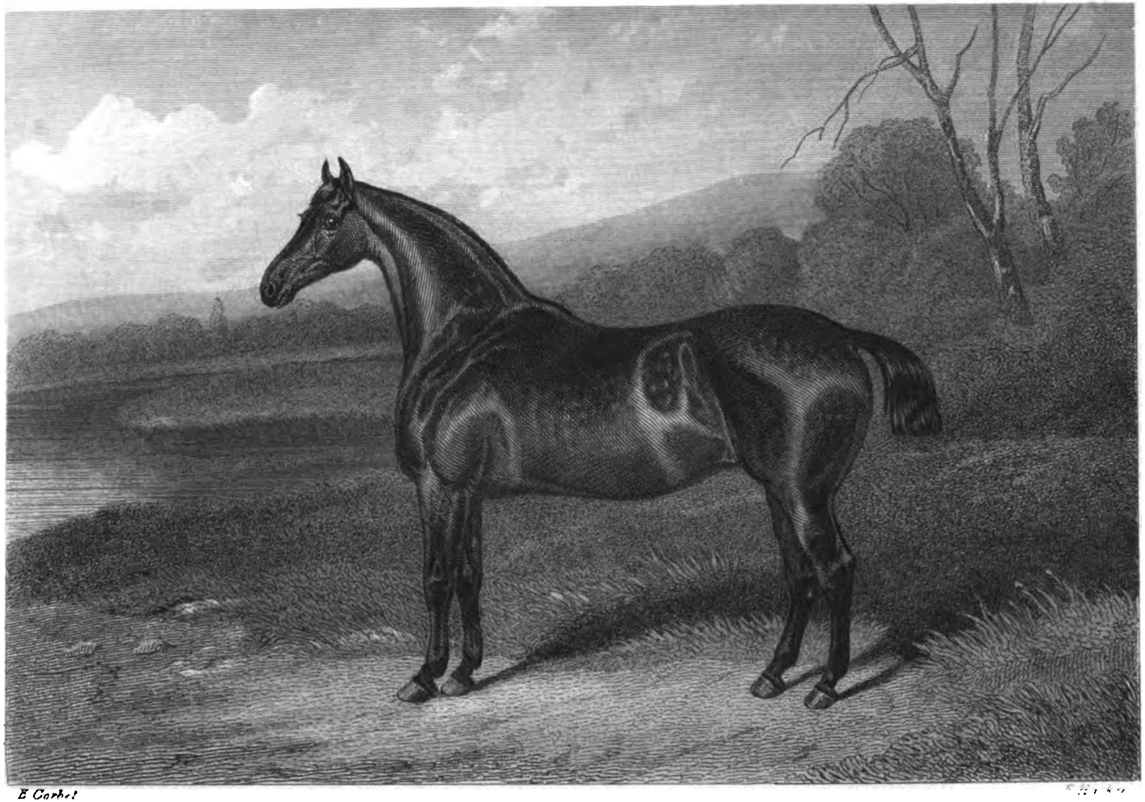


E Corbet [illegible]

Crafty.

A hackney Mare, the property of [illegible]

London Published by Rogerson & [illegible] Strand 1861

THE BRITISH

FARMER'S MAGAZINE.

NEW SERIES.

VOL. XL. 1866. NO. CXXI.

PLATE I.

CRAFTY; A HACKNEY MARE, THE WINNER OF FIFTY-FIVE PREMIUMS.

Crafty, bred by Mrs. A. Dalzell, of Stainburn Hall, Workington, in 1858, is by The Judge, out of a mare by Nimrod (h. b. son of Muley), her dam a hackney mare of unknown pedigree, the property of the late Dr. Dickinson, of Workington.

The Judge, bred by Mr. A. Dalzell in 1850, was by Galaor, out of Cerito (sister to The Currier) by The Saddler, out of Amaryllis by Cervantes. The Judge was not much of a race-horse, though he ran repeatedly in Mr. Dalzell's colours; while we hear he is the sire of very good riding stock in the Carlisle and Cumberland country.

Crafty was purchased when a yearling at £20 for Mr. H. J. Percy, of Howsenrigg, Aspatria, by his manager, the now well-known George Mulcaster, who brought her out in the same year 1859, when she was first shown, and placed third to two half-brothers by The Judge, in the yearling class of hunting colts and fillies at the Cockermouth Meeting of the Cumberland and Westmoreland Agricultural Society. In the same year Crafty took the 1st prize of 2 sovs. for yearling fillies by The Judge, and the 2nd prize for yearling saddle or harness fillies, at the Wigton Agricultural Society's show.

1860.—1st prize, £2, for two-year-old saddle or harness fillies, Wigton show.

1861.—1st prize, £2, for three-year-old hunting fillies, and placed second in hackneys of any age, at the Carlisle show of the East Cumberland Society. Ist prize, £5, for hackneys of any age, and 2nd prize, £2, for three-year-old hunting fillies, at the Wigton show of the Cumberland and Westmoreland Society.

1862.—2nd prize, £10, for roadster brood mares, at the Battersea show of the Royal Agricultural Society of England. 1st prize, £10, for hackneys of any age, at the Preston Guild show of the Royal North Lancashire Society. Second in hackneys of any age, and not placed in four-year-old saddle or harness colts or fillies, at the Carlisle show of the East Cumberland Society. 1st prize, £3, for hackneys of any age, and 1st prize, £3, for four-year-old hunting colts or fillies, at the Whitehaven show of the West Cumberland Society. 1st prize, £5, for hackneys of any age, at the Wigton Society's show. 1st prize, £5, for hackneys of any age, at the Kirby-Stephen show of the Cumberland and Westmoreland Society.

1863.—1st prize, £15, for roadster brood mares, at the Worcester show of the Royal Agricultural Society of England. 1st prize, £2, for brood mares, road or field, at the Ulverstone show of the North Lonsdale Society. 1st prize, challenge cup, £10 10s., for brood mares, road or field, and 2nd prize, £2, for hackneys of any age, at the Lancaster show of the Royal North Lancashire Society. 1st prize, £10, for roadsters of any age, at the Birkenhead show of the Manchester and Liverpool Society. 1st prize, silver cup, £8, for roadsters of any age, at the Middleton Society's show. 1st prize, silver cup, £4 and £6, for hackneys of any age, at the Carlisle show of the East Cumberland Society.

1864.—1st prize, £25, for hackneys, at the Islington Horse show, in the Agricultural Hall. 1st prize, £10, for roadsters, at the Darlington show. 1st prize, silver cup, £20, for hackneys, at the Howden show of the Yorkshire Agricultural Society. 1st prize, £5, for roadsters, up to 11 stone, and silver cup, for roadsters of any age, height, or breed, as also placed second in the all-aged hunters class, at the Halifax show of the Halifax and Calder Vale Society. 1st prize, £8, for hackneys of any age, at the Knutsford show of the Manchester and Liverpool Society. 2nd prize, £5, for roadsters of any age, at the Middleton Society's show. 2nd prize for hackneys, at the Whitehaven show of the West Cumberland Society.

1865.—1st prize, £25, for hackneys, at the Islington Horse show, in the Agricultural Hall. 1st prize, £20, for hackneys, at the Doncaster show of the Yorkshire Society. 1st prize, £10, for hackneys, at the Durham Agricultural Society's show. 1st prize, £8, for hunting brood mares, at the Morpeth show of the Northumberland Society. 1st prize, £5, for roadsters of any age, at the Rochdale show. 2nd prize, £2, for road or field, at the Burnley show. 2nd prize, £5, for roadsters of any age, at the Oldham show of the Manchester and Liverpool Society. 1st prize, £3, for roadsters, and 1st prize (special) silver cup for roadsters of any age, height, or breed, at the Halifax show of the Halifax and Calder Vale Society. 1st prize, £2, for roadsters of any age, at the Keighley Society's show. 1st prize, £7 10s., for hackneys, at the Cockermouth Society's show. 1st prize, silver cup, £8, for roadsters of any age, at the Middleton Society's show. 1st prize, £5, for hackneys, at the Wetherby Society's show. 1st prize, in extra stock, at the Wigton Society's show. 1st prize, £2, for hackneys, at the Whitehaven show of the West Cumberland Society.

1866.—2nd prize, £15, for hackneys, at the Islington Horse show, in the Agricultural Hall. 1st prize, £15, for hackneys, at the Birmingham Horse show, in Bingley Hall. 1st prize, £20, for hackneys, at the York show of the Yorkshire Agricultural Society.

The summary of Crafty's performances on the show-ground gives this extraordinary result: Has been exhibited 56 times, taken 41 first prizes, 13 second prizes, 1 third prize, and was once not noticed by the judges—the total reaching to £304 in public money, with six silver cups. She has never been beaten twice by the same horse; and in six of her defeats for first place at the more local meetings, she has in turn taken the honours when she again met any of her previous conquerors. We have ourselves had Crafty before us in the ring, and although we have placed her first, we own to having also put her no higher than second, even with her Royal ribands still fresh upon her. It will be noticed that the old mare has taken many of her premiums in the brood-mare classes, for which she has qualified in this way:

1862, br. c. by Orford (son of The Emperor).
1864, b. f. by The Judge.
1865, b. c. by Motley.
1866, slipped a dead filly to Langar, and was again put to Motley. Her second foal to her own sire, The Judge, reads as one of those monstrous crosses, if cross it can be called, in which we can see no sense, though the filly is said to be full of promise; but we hope never to hear of the experiment being repeated.

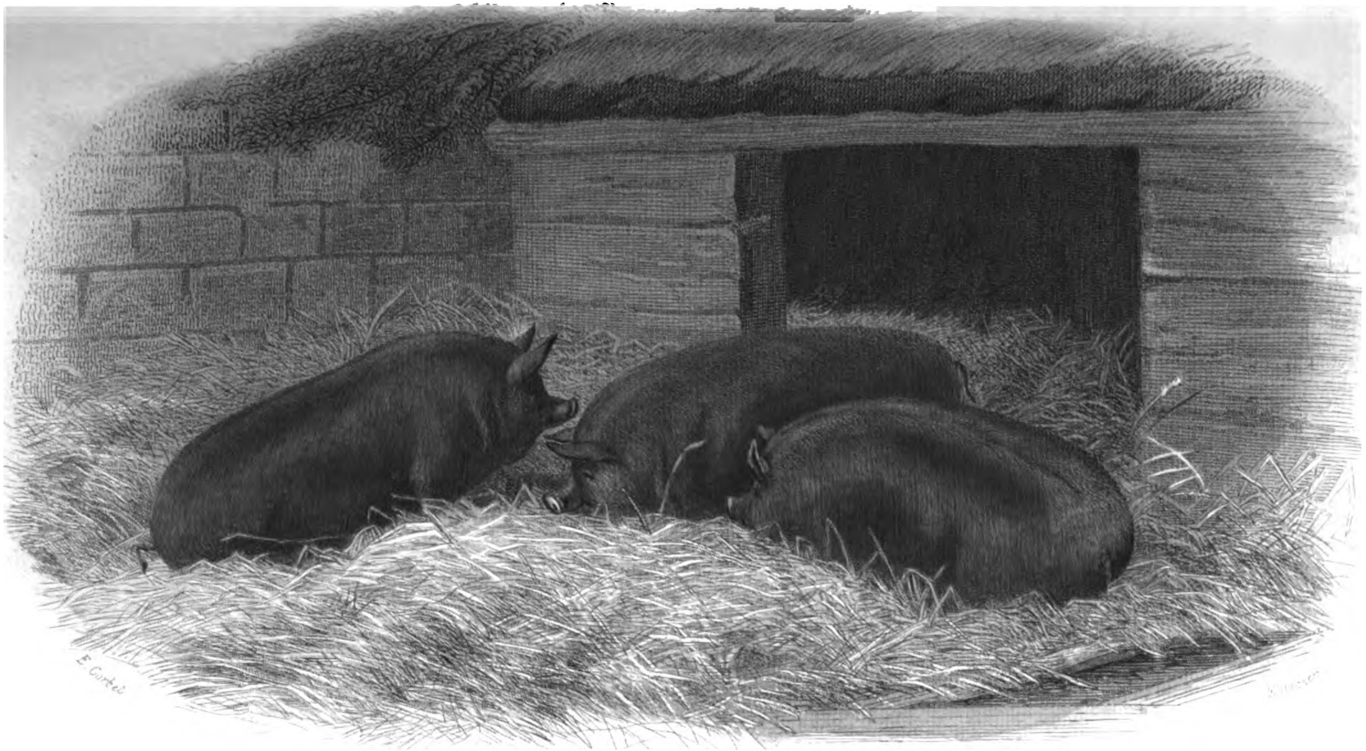
Crafty is a rich dappled brown mare, standing fifteen hands one inch and a-half high, and girthing six feet two-and-a-half. She has a neat sensible head with a good eye and a nicely crested neck, running into well-raised withers. She has a full chest with beautifully laid shoulders, a capital barrel and back, with good round quarters and well-developed arms and thighs. Then, her joints are excellent, her legs and feet first-rate, while she is full of power without lumber, but with plenty of length, hardy looks, and especially grand taking action. Indeed, when once the order is given to saddle, and Mulcaster gets on her back, it is generally about all over, for perhaps so showy a nag and so good a showman have never been seen together. Her tail to be sure is rather mean, but when set going she spreads this out fan-like, and so makes up a yet more perfect picture than she even offers to stand alongside of. Crafty having now won nearly all she can, including the chief honours of the Royal Agricultural Society and the first prizes of the Great Yorkshire Society three years in succession, will most probably not be exhibited again, but kept for the stud, varied by a little gentle work about the farm. Still, Mr. Percy promises to keep his place in the show-ring, as Mulcaster is always on the look-out for a good-looking young one, and the Howsenrigg stud has already been further distinguished by the many successful appearances of the cob Robin, and the hunting horse Ingleby.

PLATE II.

BERKSHIRE PIGS.

THE PROPERTY OF MR. G. M. ALLENDER, OF HARTWELL, AYLESBURY.

These three sows are from a pen of five exhibited at the Birmingham Show, in the December of last year, and when we thus wrote of them:—"A long way the best class was that for five breeding Berkshires, where the entries were not much below those of last year, and the merit more than usual; the judges, indeed, declared that they had never seen a better pen, at all points, than Mr. Joseph Smith's highly-bred cup winners; only disfigured as they were by the pig-man having attempted to burn or rub out certain grey hairs, where the animals had consequently become quite bare, and these unsightly spots told rather against the first impression. Mr. Smith, however, took the second premium also with the companion pen, one of his most formidable opponents, Mr. Allender, being disqualified by the veterinarian on the ground that 'the state of dentition' indicated that the pigs exceeded the age at which they were entered. Fortunately, Mr. Allender has not merely a character to depend upon, but so much method in breeding and registering his pigs, that he and his man are prepared in the face of this disqualification to make affidavits that the animals are of the age at which they are entered. If so, what reliance can be placed upon this system of examination? If, as is well known, by changing his food you can change the mouth of a sheep, why should not that of a pig alter under similar circumstances? At Plymouth, certainly, one or two offenders condemned themselves by having entered the same pigs at one show as of this age, and as of that at another. But in the present case we have to deal with a gentleman whose word has never yet been questioned, and who, whatever other steps he may take, we do trust will have the condemned pigs examined by some other professor, if only to demonstrate what the test is really worth. If another member



Berkshire Pigs

The property of Mr. G. M. Allender, of Hartwell, Aylesbury

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of the profession be found to agree with the opinion already given, then the principle must be a fallacy; and if not, then the still greater need will there be for some more decided data to go on."

The pigs were subsequently examined by Professor Simonds, who pronounced them to be certainly not older than the age at which they were entered, that is under six months; and Mr. Allender consequently lost all chance of his sows being registered as prize pigs, through the mistake of the official inspector of the show.

Mr. Allender commenced breeding his Berkshires with a boar he purchased of Mr. Elwes, of Cheltenham, at one of the Gloucester Meetings, while he has since used others from the stock of the Reverend Mr. Bailey, at Swindon. Although their breeder only took to this business in 1861, the success of the Buckinghamshire-Berkshires has been very great, and they have in turn won prizes at the Meetings of the Royal Agricultural Society of England at Worcester and Newcastle; of the Midland Counties Society at Birmingham; as well as at a number of the more local shows at Aylesbury, Peterborough, Banbury, Oxford, Bedford, and Stratford-on-Avon. The disqualification, however, at Birmingham has so disgusted Mr. Allender that he has decided to give over exhibiting, and, as we hear, his stock of breeding sows will shortly be sold off.

THE SUPPLY OF GOOD WATER TO TOWNS.

BY CUTHBERT W. JOHNSON, F.R.S.

The quality of the water we drink is a deeply interesting fact. This inquiry is of great importance to the indwellers of the most secluded farm-house—is of still deeper interest to the citizen who perhaps derives his miserable supply from a water company, who draw their water from the nearest river.

This question, so important to health, is only now beginning to be earnestly examined by the inhabitants of such crowded places as London and Liverpool. The advent of the cholera has at last aroused the public to a tolerable sense of the vast importance of the inquiry, and gigantic efforts are proposed for bringing water to Liverpool from the Bala Lake, and to London from the sources of the Severn and the Wye, or from Ulleswater and Thirlmere, or from the lower portion of the valley of the Severn.

In these projects many of our readers are considerably interested. The very enormous quantity of water which it will be necessary to intercept for the supply of such densely inhabited places as Liverpool and the Metropolis will of necessitiy very materially affect many an owner of a water-mill, and of many an irrigated meadow. For these, compensation must of course be carefully provided; and these owners, be it remembered, will be affected whether the required supply is obtained from gathering grounds, or springs, or from wells; for, in any case, the ordinary supply of water to the river which drains their watershed will be very considerably diminished.

In the schemes to which we have alluded for a supply of water, recourse is proposed to districts where the rainfall is perhaps greater than in any other portion of our island, and where, owing to the nature of the rocky soil from whence it drains, the water is very pure. But like all supplies which are obtained from gathering grounds, that degree of purity varies with the season and other circumstances. In this way the water with which Manchester and Liverpool are chiefly supplied became, in the dry season of 1864, not only limited in amount, but more than usually impure; other towns in that great manufacturing district, also supplied with their water from gathering grounds, suffered in a similar way. In that year I found the water supply of Penzance and that of Plymouth, both of gathering-ground origin, in a similar plight—the quantity much reduced, the water quite unfit for drinking purposes.

Thus being dependent upon the varying amount of rainfall, it becomes necessary in all such inquiries to ascertain the extent of that variation. A still more important branch of this research consists in examining the truth of what is a common opinion, that our rainfall is becoming less than it used to be in by-gone times. On this great question Professor Ansted has recently remarked at the conclusion of a valuable paper (*Jour. Roy. Ag. Soc., N. S.*, vol. ii., p. 77):

"It is at any rate certain (Brit. Assoc. Rep. for 1862, p. 296, G. T. Symonds, Esq.) that rainfall during the ten years 1850-1859 was five per cent. lower than the mean annual rainfall of the fifty years ending 1861, if we exclude the small district of the lakes, which is altogether exceptional. It is equally certain that although 1862 was slightly above the mean, the two succeeding years (1863 and 1864), and the year now just concluded, 1865, have been very much below, and have been exceptionally dry. And the study of the carefully prepared and complete tables, now in course of publication by Mr. Symonds, shows that where rain-gauges are similarly placed, and can fairly be compared, they all point to the same general conclusion. But there is still much to be done, and a vast amount of information to be collected and tabulated before the subject can be fully discussed in all its bearings. A succession of years of short water-supply is a very serious event, and very injurious to the well-being of any country. In England, where the supply is usually somewhat large, and there exists a large subterranean accumulation, it might be expected that the evil would be less felt than on the continent of Europe; but practically this is not the case. The general style of cultivation turns upon crops, the majority of which are calculated to endure, and even to benefit by very frequent rain and a comparatively large rainfall; and we are sometimes exposed to great suffering, not only by diminished quantity, but by an altered mode of distribution. It is only very lately that good observations concerning the rate of distribution have been made, and it is as yet too soon to deduce general conclusions. The number of rainy days in each month, and in the year, might, one would think, be decided easily enough; but even in this matter there has hitherto been a want of system that renders observations nearly worthless. Thus, while one person considers every day rainy on which any rain falls, another requires that his rain-gauge shall register something, however small; and a third, that there shall be a definite and stated quantity. It is evidently quite impossible to compare statements where there is so little agreement as to the terms made use of. But in this again there is now a spirit of improvement, and after the lapse of a few years the agriculturist will know better than he can do at present, both whether the climate of England is really changing, and if so whether the change is for good or evil.

"The mean rainfall for the whole of the British islands is so different from the means for England, Scotland, and Ireland taken separately, and the mean of all England is also so different from the means of certain districts taken separately, that a collection of observations made over a large district cannot safely be tabulated together without great precaution being taken to avoid error. It is, indeed, specially necessary to define natural districts, with a knowledge of the proximate conditions, and with an express view to this branch of meteorology. The districts assumed at present are twenty-three in number: eleven in England, eight in Scotland, and four in Ireland. So far even as England and Scotland are concerned, these are certainly very imperfect, and Ireland must undergo re-arrangement as soon as the state of the observations will permit. These divisions, however, rather refer to geographical position than to similar physical conditions. The total number of stations at which observations are now made is very large.

"It has often happened that a year of drought in many large tracts of the United Kingdom has been a year of excessive rainfall in others; but for this there have generally been assignable reasons. More usually the causes producing exceptional years must be looked for from a distance, and affect large districts of Europe as well as the British islands. One general law of rainfall, however, seems to obtain in every part of the land of the north temperate zone, in which records have been carefully kept for a considerable time; and although England gives somewhat extreme examples of the operation of this law, and may even seem sometimes exceptional, the general tendency of the observations proves the existence of a considerable amount of harmony and inter-dependence.

"If, then, it be the case, as seems very probable, that a diminution of rainfall is taking place in England, it is evident that the cause for such a result may be local, and the result of human influence and the cultivation of the land. On the other hand, the cause may be cosmical; it may affect all Europe, and be connected with other changes of various kinds, such as the elevation of land, the shallowing of certain large seas, and the result of that modifying force which never ceases to act, but of whose mode of action we know so little. The change of temperature or rainfall, only lately suggested as a possibility in England, may be part of a far greater change that has been affecting our climate, not only since the glacial period of geologists, but since the earth first began to exist as a fit habitation for civilized man."

The rainfall, then, being the original source of all water supplies, it becomes of importance to consider not only the amount of water falling upon a given extent of country, but the extent to which that water is either evaporated from the surface of the earth or is absorbed by the soil; and draining from it becomes available for a great water supply.

Now this question has been carefully examined by Mr. Baldwin Latham, the Engineer to the Croydon Board of Health, in his valuable work "On the Supply of Water to Towns." As he remarks (page 10): "It is extremely difficult to arrive at correct results as to the amount of evaporation taking place at any time either from land or water, as there are so many circumstances and conditions that may affect the subject and lead to errors: considerable caution must, therefore, be exercised in dealing with the results, and it is always better to be on the safe side, that the calculations of the engineer may not lead to a diminished supply of water. It is quite clear that the rate of evaporation from land is very much less than the rainfall, otherwise we should have no rivers or springs. But the rate of evaporation from water-surfaces considerably exceeds that from land, and in some cases the rainfall. Dr. Dalton found, by experiment, that the mean daily quantity evaporated from a vessel of water freely exposed to wind and sun, was in March, .033 in.; in April, .055 in.; in May, .075 in.; in June, .063 in.; in July, .122 in.; and in the hottest weather of summer he never found the rate of evaporation to exceed .200 in. per day. Experiments made by Mr. Luke Howard, at Plaistow, on the rate of evaporation from water-surfaces, gave .912 of the rainfall as the amount evaporated. In similar experiments made by M. Valles, at Dijon, the rate of evaporation was .966 of the rainfall. A like experiment, made at the same time, but from a smaller vessel, gave a greater amount of evaporation, which in this instance exceeded the rainfall of the period. It is probable that the annual mean rate of evaporation in this country from water-surfaces may equal 36 in. or 37 in. In other countries the rate will increase considerably with the mean temperature."

The result of certain great gathering-ground operations in our island is thus given by Mr. Latham:

"Glasgow is supplied with water from Loch Katrine, which has a drainage area of 43,000 acres on the Silurian formation. This supplies Glasgow with 23,000,000 gallons of water daily, besides 40,000,000 gallons supplied daily as compensation to mill-owners. A supply for 130 days is stored, and with a yearly rainfall of 60 inches, 0.402 of it is used.

"Liverpool is partly supplied from wells, but principally from a drainage area of 10,400 acres, contributing to Rivington Pike. A supply of 120 days is stored, and with a rainfall of 55.5 inches, .436 of it is stored.

"Manchester is supplied from a drainage area of 18,900 acres on the millstone grit formation, which furnishes a supply of 12,000,000 gallons per day, to a population of 550,000, and 55 cubic feet of water per second for twelve hours daily, as compensation to millowners. With a rainfall of 37 inches, .617 of it is actually used, while, from Mr. Bateman's evidence, it appears that nearly three-fourths of the rainfall can be made available.

"Oldham, in Lancashire, is supplied from a drainage area of 2,700 acres, situated in the coal measures, which furnishes a daily supply to the town of 1,600,000 gallons, and 219 cubic feet of water per minute for twelve hours daily, as compensation to millowners. With a rainfall of 35 inches, .415 of it is used, and six months' supply is stored.

"Paisley is supplied from a drainage area of 790½ acres, situated on the coal measures. The supply is taken by open channels, and 200 days' consumption is stored. From a recent report of W. R. Copeland, the engineer, it appears that during the last year, with a rainfall of 56.33 inches, .548 of it was used; but the amount capable of being supplied he takes at 84 per cent. of the rainfall, as he allows but 16 per cent. for loss by evaporation and absorption.

"Plymouth, in Devon, is supplied from a drainage area of 4,000 acres, situated on the granite hills of Dartmoor. The supply is taken by open channels. With a rainfall of 44 inches, .343 of it is used for town purposes.

"Southampton is partly supplied from a drainage area of 120 acres, situated on the Eocene formation. With a rainfall of 23 inches, one-third of it is collected.

"Wigan, in Lancashire, is supplied from a drainage area of 2,200 acres, situated on the coal measures, which furnishes a supply of 600,000 gallons per day to the town, and 800,000 gallons per day as compensation to millowners. The supply is taken by open channels, and

180 days' consumption is stored. With a rainfall of 40 inches, .26 of it is used."

This mode of obtaining water for towns was adopted many centuries since; for, as Mr. Latham observes, "works of this description are not of modern origin, but have been in use in past ages in many countries. A portion of the water supply of ancient Jerusalem, as mentioned by Dr. Whitty and others, was furnished in this manner, as a large drainage area contributed to supply the Pools of Solomon with water; in fact, these pools are reservoirs formed like those of many modern works, partly by throwing an embankment across a valley, and partly by excavation. The contents of the three pools, as given by Dr. Robinson's measurement, are as follows: First pool has a capacity of 1,634,475 cubic feet; second, 2,536,414 cubic feet; third, 3,873,937 cubic feet; making a total capacity of upwards of 50,000,000 of gallons. These pools are arranged in the incline of a valley, the smallest being the highest, and the largest the lowest pool. As the second pool is only 160 feet from the first, and the lowest but 248 feet from the second, it is quite clear that a much larger reservoir might have been made by carrying up the embankment of the lowest reservoir to a greater height; but the probability is, it was not done as a measure of safety, for the additional depth of water would have added immensely to the risk of damage; and, indeed, the extreme care and caution which seem to have market all the early hydraulic works is by no means a bad example to follow. The gigantic reservoirs of Egypt, for storing the waters of the Nile for utilization, are ancient examples of works of this nature, and are of so stupendous a character, and of so remote a date, as to perplex and confound historians, many of whom have classed them with natural formations. But, as Ewbank observes, all ancient writers unite in asserting that Lakes Nitocris and Mœris are the work of men's hands. China also contains many traces of the early development and high state of mechanical and hydraulic science; and vast reservoirs, for containing water for the supply of canals, for agricultural and commercial purposes, are not at all uncommon there. The care and skill of the Romans are shown, amongst other works, in those of this character, for the supply of water to the cities and towns under their dominion; indeed, it is a remarkable fact that, in nearly every country and land subjugated by their arms, the remnants of their handiwork and skill are still to be seen. In many instances the benefits they conferred upon the past generations are still felt by the present generations occupying those countries."

The composition of the waters obtained from such sources is a very important question. Let us contrast the analysis of some of these waters with those obtained from other sources.

The Glasgow or Loch Katrine water is remarkably free from foreign substances, an imperial gallon containing only about 2 grains of solid matter. That of the Lakes of Haweswater, Ullswater, and Thirlmere, analyzed by Professor Way, for Messrs. Hemans and Hassard, only 3.99, 4.16, and 3.61 grains per gallon. The foreign matter consisted of

	Haweswater.	Ullswater	Thirlmere.
Carbonate of lime	0.90	1.45	0.75
„ magnesia	0.36	0.42	0.29
„ soda	0.56	0.40	0.20
Chlorides of soda and potassium	0.40	0.69	0.77
Sulphate of soda...................	0.90	0.65	0.78
Oxide of iron, silica, &c.........	0.25	0.20	0.05
Organic matter	0.62	0.35	0.77
Total solid matter	3.99	4.16	3.61

These waters far excel in purity those at present supplied to many towns. For instance, the Thames-water contains, according to Dr. Letheby, about 22 grains of solid matters per gallon; the water of the Lea, about 23; that of the Colne, 21.3; that of the Trent, 50.16.

The Thames-water impurities were as follows:

Carbonate of lime....................	11.10
Sulphate of lime	4.78
Sulphate of soda	.48
Common salt..........................	1.88
Oxide of iron, &c....................	.76
Silicic acid............................	1.00
Organic matter........................	2.75
	22.75

Of this water and that of the Lea the inhabitants of the Metropolis daily employ nearly 100,000,000 gallons.

In having recourse for a supply of water to gathering-grounds or to the collections of these grounds stored up in lakes, like those of Loch Katrine, Ulleswater, or Bala, a large amount of water is available, to a great extent free from organic or other impurities. These waters, however, are not usually so good for drinking as those obtained from wells, especially from those made in the Chalk Formation.

These chalk-waters are commonly surcharged with carbonic-acid gas, and, in consequence, are able to dissolve about twelve grains of chalk per gallon. By boiling this water the carbonic-acid gas is driven off; and then more than two-thirds of the chalk is deposited. This water is sparkling, brisk, and delicious to drink.

I am not able to state the amount of this kind of water which some of the streams issuing from some of our great southern chalk formation pour into the sea; but, judging from the appearance of the Wiltshire Avon, at Salisbury, or that of the Itchen, as it rapidly flows under Winchester-bridge, I should suppose that an ample supply might be obtained from these for the use of the Metropolis; and, if so, that supply should be obtained from the feeding springs, before they arrive at the surface, for then the water contains all its carbonic-acid gas, and has not been otherwise deteriorated by the addition of any organic matter.

In any event, our readers who are farming in the valley of the Thames (and a similar remark applies to other valleys) will rejoice to hear of any plan being adopted which shall lead to the purifying of its waters and the removal of the many obstructions to its regular flow—impediments which annually lead not only to the great injury of the lands to which the flood-waters extend but to the health of the neighbourhood.

KEEPING SWEET POTATOES.—My method to keep sweet potatoes is to air-dry sand by spreading it on boards or a broad walk; dig the potatoes in the morning, and pick them in the afternoon, before the dew falls, throwing out all the bruised ones. I pack them in flour barrels—first a coat of sand, then a layer of potatoes, so that the sand will fill the interstices. If the sand is too dry, as when dried in a kiln, it will shrivel the potatoes. I had a room on the south side of my dining-room that I kept the potatoes in after packing them in the barrels. The heat from the coal stove in the dining-room was all that was given them, and I did not lost two dozen tubers out of eight barrels; I have found them as sound in the sand as when dug in the fall. The outside dampness should be well dried off the potatoes. I felt myself amply paid by the treat they gave through the winter. Cold fall rains, on cold damp sand, make the potatoes lose their sweetness.—*Newark, New Jersey.—Country Gentleman.*

FILTRATION FOR CATTLE TROUGHS.

Something very much out of date manifests itself in the common practice of watering cattle. There may be exceptions to this rule; but a visit to the old ponds or the modern watering troughs at this season proves that such exceptions are few and far between, in most of our English counties.

From the important part which water plays in the animal economy, a dirty thick liquid, green, brown, and blue, from being literally in life by swarms of insects, with a luxuriant crop of cryptogamous vegetation, is, to speak in the mildest possible terms, the opposite of what it should be. That water is of more value than oilcake in the dietary of cattle cannot be doubted; and yet how differently does it appear to be estimated, judging from practical data! For throughout the length and breadth of the land the adulteration of the latter forms the universal complaint; whereas the adulteration of the former is passed over as one of the shortcomings of a daily necessity. We have even heard it argued that the stinking pool was better for cattle than the clear crystal fountain!

True, many of our clear crystal streams contain an amount of saline matter that reduces its value for cattle, often rendering it worse than the soft water in the ponds, although the latter may be literally swarming with insect life; but the objection to the former falls to the ground as null and void in a practical light, for water should be purified of its objectionable inorganic matter as well as of decomposing animal and vegetable matter, with the countless brood of insects invariably present in the warm weather of summer. Altogether, from beginning to end, the subject evidently demands a thorough investigation.

The common practice of purifying water for large towns is by filtration. The process is generally very imperfectly performed by water companies, while the allowing of the water to remain in large open public reservoirs and in uncovered house cisterns afterwards makes it often nearly as impure as in the outset. When the reservoirs and cisterns are covered it greatly retards the growth of animal and vegetable life; but even when thus preserved from atmospheric influence the water is seldom fit for drinking until filtered a second time.

The principles which experience has taught to be necessary relative to the health of towns in procuring a proper supply of pure water furnish the farmer with an instructive lesson as to how he should supply his cattle in order to preserve their health. Just now, when cholera is making its appearance here and there as if in search of an inviting field or predisposing ground, our civic authorities are alive to the dangerous character of impure drinking water, stagnant sewage matter, and such like choleraic-producing substances; and although our agricultural societies have not yet begun corresponding chemical, microscopic, and other scientific investigations relative to the cause of the growing mortality amongst cattle, and how much this is due to the drinking of impure water—water that would inevitably produce cholera in any of our large towns at the present time—yet the visitation of rinderpest is obviously turning attention in this direction. And the reader will perceive that, judging from the parallel case of towns, stagnant ponds, in which the urine and fæces of cattle, and the washings of grass lands, &c., are allowed to accumulate and putrefy, thereby polluting the atmosphere in the immediate neighbourhood of these ponds—this polluted atmosphere may be as instrumental in propagating disease, as it is taken into the circulation by inspiration.

There is no doubt a difference between the stomach of a man and that of an ox, and no doubt also the vast majority of the agricultural body may as yet conclude that the organs of cattle may have the power of defecating ingested and inhaled matters of all impurities which the former has not. Though, however, this were granted, yet every species of the animal creation has its weak points, the ox not excepted; so that when certain morbid substances are taken into his circulation they may prove fatal, although they might prove harmless in the circulation of man, the horse, or pig.

Naturally the organs of smell and taste in cattle are more sensitive than are those of man, owing perhaps to the omnivorous and depraved habits of the latter.

It will no doubt be said that our cattle, strictly speaking, are now in an artificial state, and not in a natural one, and that their habits by long use are about as omnivorous and depraved as are those of man.

The objection thus raised, however, may not inaptly be said practically to refute itself; for by training our cattle, or perhaps we should rather say by starving them into the necessity of eating many things which they would refuse in a natural state, and of drinking water of a still more abnormal character, we are undermining their normal health, thereby predisposing them to all the contagious maladies now so rife and ruinous in our flocks and herds.

From these observations it follows that farmers ought to study closely the natural wants of their cattle; and one of these wants, more especially at this season of the year, is an ample supply of pure water. If water forms 83 per cent. of the whole constituent elements of the body, and there is also a large consumption daily in alimentation and excretion, how essentially necessary is it that this large supply should be free from contamination of every kind injurious to health!

The grand mistake into which farmers are liable to fall in this case, is to overlook or under-estimate its practical dimensions. In our climate water is such a common-place commodity, putting summer and winter together, that few ever think of setting a pecuniary value upon it for their cattle. If the supply is plentiful and the quality good at all seasons of the year, the blessing is a natural one, and accepted accordingly. If the quality is bad, it is considered a natural misfortune to which the locality is subject—one that is often borne as if it cannot be helped. It is only when a deficiency in the supply is experienced that people grumble, and then the makeshifts to catch and store rain-water are of a most inefficient character. Had farmers to pay their landlords for their water according to its intrinsic and dietetic value, it would doubtless be otherwise; for under such conditions they would not pay away sterling money for dirty water. But because farmers get their water for nothing, that is surely no valid reason why they should water their cattle out of any stinking puddle. And this, too, is not the most unfavourable view of the subject that must be taken, for in our day the quality of the water in our ponds and rivers is much worse than it was in the olden time, owing to the more effective drainage of land and the extensive use of artificial manures, together with the increase of population in towns and refuse from manufactories, &c., and the impurities which find their way into the water from these sources. Altogether, it is not very easy to comprehend the real magnitude of the whole question involved in supplying cattle with pure water; for at the present time the quality of the supply is annually getting from bad to worse over a large extent of the country.

Those who have a regular supply of pure water from natural springs, or from artificial wells and pumps, have little more to do than to keep out impurities, and attend to the daily washing out of the water troughs, and the supplying them with water. A sufficiency should be put into the trough to supply the daily wants of the cattle, with the addition of what may be required to wash out the trough, after which it should be rinsed out with a pailful of newly-drawn water, so as effectually to clean it of the seeds and germs of animal and vegetable life which may have been deposited during the day. Ignorant cowherds who throw in fresh water upon the stale actually cultivate the growth of these microscopic broods of little bodies and vegetables that give to the water its green or brown colour. In the warm weather of summer, the atmosphere is often literally thick with the germs of such life, and cattle when they drink, whether in the house or in the field, invariably leave less or more of the food they are eating or ruminating upon in the water, which attracts and feeds such organisms, thereby nursing them into maturity.

From the large quantities of artificial manures now used, the drainage of arable lands ought not to be collected in ponds or reservoirs for watering cattle, if a supply can otherwise be obtained. Much spring-water which rises in arable land, and is removed in common underground drains, is also rendered unfit for the use of cattle, from its being adulterated with the manure thus washed out of the land. In all cases, therefore, where such spring-water is intended to be used for cattle, it should be conveyed in close pipes either to wells or directly to the watering troughs for use. Where spring-water does not exist, and where the dependence is exclusively upon rain-water, this should be collected if possible from waste lands, or grass lands not recently manured, or from arable lands where the manure has been exhausted by cropping, so as to have it as free as possible from foreign soluble matter, which cannot be removed by filtration.

The seeds of small plants, spores of fungi, and eggs of insects, &c., washed from waste and grass lands into surface or subsoil drains, and by these conveyed into ponds, may be got rid of by filtration. Sometimes these latter impurities are removed by natural filtration, the water having passed through a porous sandy subsoil into the pond. The best ponds are those which are deep, and into which the water is thus filtered, for in the first place the water is comparatively pure, while in the second place a deep narrow pond presents a minimum area of contaminating surface to the atmosphere, and also a nidus of attractive power to insects, from the water being of a low temperature. It is otherwise with broad shallow ponds at a higher temperature, into which the rain-water flows in open furrows, for animal and vegetable life both luxuriate in such examples.

Open ponds, however deep, are nevertheless objectionable when the water is filtered into them. The experience of on this head is practically conclusive, and therefore our ponds, surrounded as they generally are with growing wood of some kind, as if purposely to attract insects, must be converted into deep covered wells, into which the rain-water should be filtered by artificial means in the absence of natural filtration, and from which it may be pumped into the watering troughs as required. If the well is deep and the water of a low temperature, a second filtration may be unnecessary; but when the contrary conditions are present, and the first filtration not well performed, a second filtration may be the more economical and profitable practice.

As to water from rivers and their tributaries, numerous examples of this kind are in the summer time literally a series of putrid pools, in which modern eels cannot live. And even in the cold weather of winter the water is now so polluted by the sewage of towns and villages as to be, generally speaking, unwholesome for cattle. In the worst examples, filtration will not remove much of the poisonous soluble matter which the water contains, and even in the best examples much noxious matter may remain in solution after the water has passed through the filter. Practically speaking, it may be difficult to bring some of those farmers and graziers whose cattle are now, with comparatively no trouble or expense, watered at such objectionable watering places, to entertain the proposition of collecting water from other sources into deep wells for their cattle, either by surface drainage and filtration or by boring; but others will readily perceive that this may be the cheaper and more profitable plan, all things taken into calculation. Flowing water has a tendency to purify itself, and were towns once compelled by statute to divert their sewage from rivers, much water would in a few years afterwards become available for cattle by the simple process of pumping and filtration into watering troughs.—*North British Agriculturist.*

HARVESTING CORN.

During the continuance of such a wet harvest as that we now experiencing, there have been numberless suggestions to saving the corn by other methods than those provided by nature, viz., sun and wind. Somewriters propose cutting off the with but a small portion of the straw, and kiln-drying afterwards; a system sometimes resorted to in Northern Europe during wet harvest, and in all probability with a moderate degree of success. That such an expedient will never become popular in this country may be pretty safely calculated on; it is too roundabout, requires extra labour, and involves a heavy loss in waste of straw, a matter of itself not to be overlooked at the present day. Although the present is one of the most severe harvests with which these kingdoms have had to deal for many years, it has not been so bad but that a great portion of the crop, which has been materially injured, might have been saved excellent order, a great deal of extra labour saved, and the farmers themselves spared an immense deal of anxiety and uneasiness of mind. When we had a good drying day during past six weeks, it was really a good one, and cutting could proceeded with within a couple of hours of the weather clearing up, and the cut corn quite fit to be bound. Now, instead of stooking the crop when bound, if it is built up into small field stacks, each containing, say about twenty-four stooks, the corn is at once placed out of danger, the mind of the owner relieved, and the crop may in these stacks remain in the fields for an indefinite period without risk. In building the stacks some care is necessary, to see that the sheaves are laid with sufficient inclination to throw off the wet. This is of the utmost importance, as if the middle of the stack is not kept well filled, the outside sheaves will dip, and the water will penetrate to the very centre of the stack, and cause, in such a protracted wet season as the present, very serious injury. In topping the stack, the last few sheaves can be inverted, which makes a very convenient and exceedingly serviceable thatch, these sheaves being bound together in the usual manner to prevent their slipping off. It is astonishing what an amount of prejudice exists in the minds of English and Scotch farmers against this simple method of saving such a perishable property as corn, continuing, whatever the nature of the weather, to put up into stooks, and trusting to Providence for a few weeks of sunshine to enable them to get it removed in good order to the stack-yard. In Ireland the case is different, farmers in that country, however favourable the season may be, generally stacking on the third or fourth day after being cut, and letting it mature for a greater or less period, according to the size of the stack and character of the weather. Although there are seasons when there is not much occasion for taking the precautionary measure of stacking in the fields, yet the weather is so uncertain in the best of times, that care and caution, even if it should be now and again unnecessarily exercised, is in the long run by far the best policy. The great objection to this system is the loss supposed to be unavoidable by shedding when removed from the field to the farmyard, and the extra labour incurred in building the year's crop into stacks twice over. In practice both objections vanish, or are found to be scarcely worth calculating on. In building field-stacks the sheaves are not required to be carted at all, women or children carrying them gently to where the stack is to be made, and a careful man forking them to the builder. This plan is so expeditious that a dozen people will secure as many acres of heavy corn in one day. In removing, if there is any indications of shedding, a sheet can be used with great propriety, both in the field and stack-yard, thus preventing the slightest waste. How different during the present season the position of the farmer who has used the precaution of stacking to the one who has left his corn in stook! While the former enjoys ease and peace of mind engendered by the knowledge that his property, as far as human skill and foresight can avail, is safe, and needs do nothing until the weather is really favourable; the latter must be constantly on the alert, lifting the stooks, spreading out to dry, remaking, &c., and probably finding after all his trouble that when he has his corn ready to lead the rain comes down in torrents, undoing all that he has done at such a large expenditure of time and money, and this not once, but, as has been too often the case during the present season, several times over. If the English and Scotch farmers would but deign to take a lesson from their Irish brethren and give this system a fair trial, they would quickly ascertain its value and permanently adhere to it.

J. C.

HARVESTING CORN CROPS.

The usual monthly meeting of the Kelso Farmers' Club took place on Friday, Sept. 7, Mr. Purves, Linton Burnfoot, presiding. The subject set down for discussion was—"Which is the best and most profitable way of cutting and winning corn?"

Mr. DOUGLAS of Riddleton-hill, said: Let us first consider the cutting, not more with regard to safety than to expense—a most important consideration when the cost of production is so enormous and the returns for the last few years comparatively so slight. We are, however, beginning to divide our labour better, and, as a certain consequence, the small capital required yields a most abundant return. Let us try, then, to find out the way to cut and win corn well and cheaply. I trust that errors may be noticed and corrected, and proper allowance made for them. The first question is, when should it be cut? When we have a choice of times to cut a field, I think we should first look at the probable consequence as to the grain. A good many think that the best sample of wheat is obtained by cutting quick, and letting the ripening be completed in the stook; and had I only my choice between too soon and too late I should take the former; but the safest way is to cut it when ripe. Barley should be allowed to stand as long as possible, so as to be fully ripe, and the grain hard; oats, like barley, shew and weigh best when cut ripe, but when allowed to lie untied or in the swathe, a day or two's earlier cutting makes little difference. I believe that it is profitable, on an average, to run some risk of shaking, and to have one's grain well ripened and in fine condition. Dead-ripe corn requires very little winning. In the case of oats, though, I believe that look and weight ought to give way, and we should endeavour to secure good fodder for our horses and cattle. It is not everyone that knows what feeding there is in oat straw when cut early and well won. This point deserves our most careful attention. Another question which influences some is the expense. Certainly getting corn cut a shilling or two per acre below what may be expected to be market-price a week after is a strong temptation, and, besides, the danger of shaking is obviated; but I fear that the proportion of light corn more than makes up for the saving, and, in addition, you have a bad sample and light weight. Sometimes we have to cut it when we have a chance, no choice being allowed us, as in the case of wet weather; but supposing we were to please ourselves as to time, the next point is, how to reap it? In the memory of many here there was no other way but by the hook, and the reaper and his song have been the constant theme of the poet. The song, forsooth! The mention of it would lead an ignorant person to suppose that the reaper was a man or woman young, strong, and, especially, not overburdened with work, having plenty of time and heart to solace their labours with solo and chorus. Most people in this district took, and still take, care not to give much time for that sort of thing, and under the machine system the music, even the chance of it, is abolished, and the vocal recreations confined to talking in couples. I believe, by the by, that working in pairs makes people less apt to put off the time, although often not so lightsome as shearing. But enough of this. The field is here, ready; the big stones have been removed, and the furrows filled in—how are we to cut it? On steep ground, or where the corn is much twisted and lodged, the scythe or sickle must be used. The expense is nearly the same in either case, but in good standing corn I would prefer the scythe, as making the best stubble and sheaf, and in lying corn the sickle, as being most expeditious. But should the field be tolerably level, and the corn standing well up, employ the machine by all means. Of the multitude of machines which have been brought out since their first invention, what can I say? Even if I were able, time would fail me to describe them, their peculiarities, their merits, and their defects—to follow the successive improvements which have been made, and to imagine what farther advances may still be made in their construction. That is a subject for a book. The statements I am about to make can be, and doubtless have been, verified by those who use them. For another thing, my results are those of last year, as I find that I can form no opinion on this year's cutting, and, besides, I have not used the sickle enough. As for the kind of machine, from what I have seen and heard I do not think that the one-horse variety can be much recommended. Its only merit is the cost. Very few of them can be worked by one horse, and the high speed required cannot but be injurious to the machine. I find a two-horse manual deliverer answer far better. I found the expense of cutting, binding, and stooking oats to be 7s. per acre when cut with the sickle, and cheaply done too. Call it a twenty-five acre field, and it costs £8 15s. By machine the field is cut, and cut easily, in, at the very most, two days and a-half, with the following strength: Two on the machine, five lifters, five bandsters, and two to mow corners—total, fourteen; say on an average 18s. per week, or 3s. per day, which gives us £5 5s., leaving a balance of £3 10s. You say, what about the horses? Well, deduct the horses, which I do not, as it is only a by-job when they would have been idle, and I will tell you some more. How many would it take to cut this twenty-five acres in two days and a-half? Just twenty-five persons at an acre per reaper. Here is twenty-five against fourteen; which for two days and a-half is twenty-seven and a-half meals, which is something to set off against the horses. On the terms I have stated there is a saving of 3s. per acre or nearly. I give the sickle every chance, taking it at the cheapest, and allowing the machine the minimum; but I believe it may easily be made 3s. 6d. A machine will cut one hundred acres in a season, which gives £17 10s. Deducting interest and wear and tear, you have half your machine. For the self-delivery machine, the results are much the same, but it has this advantage, that one can cut corn and leave it lying in the sheaf. I speak of the sheafing side-delivery machine, all others being much inferior. It requires better standing corn; but, on the other hand, the draught is lighter. There should be, and could easily be, a fast and slow movement of the rakes for light and heavy corn, which would improve the efficiency of the machine; but the great desideratum is a fast moving reel, with a rake under the control of the driver. If some genius could invent this, the self-deliverer would beat the manual. Besides the cost, the machine, when well handled, makes cleaner stubble than can be got by any other way, while the sheaf is much neater and better to thrash, by having a straight bottom and the heads lying one way. Whether machine or hand-cut corn wins fastest is a question I cannot answer. I have heard various opinions on the matter; but my own impression is that they are much the same, any difference being possibly due to particular causes. The great defect of machines, and that which alone prevents their universal use, is that they cannot cut when the heads of the grain are lying flat, in a direction opposite to that in which the machine is advancing. Remove this, and they are perfect—the greatest invention the agricultural world has ever seen, and one step more to that state of things which some see looming in the future. Never mind the future just now; the present is what concerns us. The corn is down, now for the binding and stooking. Even the very best-hands are apt to make the sheaves too large; and the sins of the Irish in this respect are vexatious in the extreme. These large sheaves are a great nuisance, difficult to win and unwieldy to handle; in fact, the person who invented the corn-knot deserves the reprobation of posterity. Should hard necessity compel to shear when dampish, it should be tied into gaits. When well set, these soon dry, and the time spent in binding them up is not lost. I find that now people after the machine work for a rest, and that in consequence corn is often laid in and badly bound. This is the most unpardonable sin of the whole. If your bands be slack, the stook cannot stand; besides, a slack band is pretty sure to yield before it gets to the mill. The stooks are a great deal the better of being set north and south, so as to let each side get its share of the sun, and the corn-knot outside. I think small stooks stand best—not more than ten sheaves; and besides, they look better. Always use the horse-rake; the hand-implement is clumsy, slow, and, in the hands of most people, useless. The horse-rake, in careful hands, can do little damage to the bottom. It is a difficult matter to get corn right for leading; even in the best of weather mistakes may be made, and patience is the best rule, for corn should never be led till thoroughly won. After wet, the sheaves may be opened out, if there is any fear of sprouting; and in all cases it is very advisable to lead corn from a dark or sheltered spot to some place where it can get sun and wind. It is also better, where the ground is thickly covered with young grass or dirt, to turn up the bottoms of the sheaves to the wind half-an-hour or so before leading; this, if carefully done, does not injure the binding.

As to leading, or carting, it should be done as quickly as possible. Some people do not care to go more than the regular hours; but I like to employ every available moment, and get it in as fast as I can. There are various ways of putting it together. Some prefer to stack it in each field, or some immediately adjoining. Under certain circumstances, such as being at a distance from the steading, and the weather being threatening, I should adopt this plan; but, seeing that, generally, the roads are good, the days comparatively long, and no other work pressing, I should in ordinary cases try to get it to the stack-yard. Some may be induced to stack in the fields in consequence of the deplorable events which disgraced this part of the country last autumn; but such a precaution would avail little, except in the face of the chance of accidental burning; but this sort, I believe, is rare compared to the other. For the reasons I have given, I prefer to take it home, and there build it in stacks. They are better so than in sheds. The risk of spontaneous combustion is less, and should it go wrong, the trouble of leading it out much less too. The stack-yard should be high and dry, exposed to the west wind, and near the barn door. Arrange the stacks in rows, lying to the cardinal points, and intersecting each other at right angles, as I think the air circulates better than when they are set quincunx fashion. They should not be too large—16 ft. is plenty; large stacks are attended with more danger, and are less handy. People that can find it in their hearts had better build on artificial bottoms; we that cannot must just build on plenty of straw. We are often plagued by bad stacking. I like to see a tidy stack-yard, but beauty is immaterial if some essential points are attended to. The most important are, that the heads of the sheaves should slope upwards, and that the top be kept true and steep. It is horrible to see the ultimate condition of a stack in which these have been neglected. Under any circumstances, I am an advocate for kilns (ventilators) in stacks; they cannot but be the better for a current of air going through them. They also, I believe, strengthen a stack considerably. If possible, have the heading ready; do not spare it. Have the stacks pointed—not round topped—and tie with small ropes; thick ones are just sponges. Now, when the corn is in and headed—if all has gone on to your satisfaction, and you are properly thankful that it is so, the people should have a kirn. I say, do this, as they are hard wrought in leading time, and a little extra favour puts them into good spirits, and tends to keep up a proper feeling between master and servant. Some prefer to give them the money, and let them make of it what they will, or make up to them in other ways; but the best way is to give them a good kirn. I can see no objection to it; it gives a great deal of pleasure, and does no harm whatever. A few words more, and I have done. What we require in all farm operations is a complete system of machinery—efficient to do all that we want, and elastic to do it when and how we want. No occupation is so destitute of this auxiliary to labour as agriculture. Though we may not see it, yet I am persuaded that succeeding generations will enjoy advantages that we can only possess in anticipation, just as we have facilities that our forefathers never dreamed of. At some future period, the then sage of Tiptree will not have occasion to say, as he has just done, "We must, therefore, conclude that, as compared with the enterprise of trade, commerce, and manufactures, agriculture is in a stagnant and non-progressive condition; that it neither employs sufficient capital nor labour; and that, in comparison with the others, it is poor, penurious, and humble." And, again, "Dear labour here will compel the farmer to adopt machinery far more extensively than at present." A true bill! a true prophecy! How has the manufacturer distanced us so far? Why do we, while exporting goods, import food? How is it that the manufacturer and the trader over-ride us in the legislature and the exchange? Such is the case. The key to the reason and remedy lies in the words I have quoted—words which, when I saw them, I hailed as a Godsend, as elucidating the point which I could never have put clearly. And, gentlemen, when all that the most sanguine can now anticipate has been accomplished, people will still be looking forward—still progressing. The golden year will come to them no more than to us; but, in the words of the Laureate—

> "Unto him that works, and feels he works,
> This same grand year is ever at the doors."

The CHAIRMAN congratulated Mr. Douglas on his speech, and thought he was exceedingly correct in his various statements.

AUTUMN CLEANING OF STUBBLES.

Too much cannot be said about the propriety or necessity of the autumn cleaning of stubble land; nor can it be too frequently urged upon the notice of farmers, particularly those who wish to keep pace with the times, and abandon the slovenly habits that too generally mark the routine of agricultural operations. A little time spent at this season of the year, when the cereal crops are secured and removed, in cleaning stubble land, particularly such portions of it as may be intended for root or flax crops, is well repaid when we come to get those crops sown in spring. After the summer's drought, sunshine, and moderate rainfall, before the winter rains set in, the soil is in the best possible state for pulverizing and cleansing it. After being saturated with the winter's rains, it is scarcely to be expected that the land will be in a proper state, or that time will permit of the thorough cleansing of the soil, in the great bustle that must pervade to get in the crops timeously; nor is it often that the weather will suit, so as to permit either harrow or grubber to act freely: and hence the generally foul state of the land in which farmers who neglect autumn cleaning are forced to sow the crops, which entails great expense in cleansing during the summer months, and disappointment in their expectations. As a rule, without deep autumn ploughing, good root or flax crops cannot be expected, and if the land is not cleansed of root weeds, such as couch grass, dock, &c., before ploughing, the evil is increased by dividing those roots, distributing them more widely, and turning them down deeply, which, if time and weather be permitted, in the spring vastly increases the labour and expense in extracting them, and if not thoroughly done then, which in ninety-nine cases out of a hundred cannot be done, only increases the progeny to an incredible extent. To save expense, and have the land in the best possible state for spring culture, it should be in every instance surface-cleansed before ploughing; and though this may be objected to by some on the score of expense, the cost is amply repaid: first, in a large quantity of bedding in gathering and stacking the stubble, and also in the extra quantity of manure resulting from the stubble used for such purposes.

In former times careful farmers went to the expense and trouble of chopping up the stubble with spades, and gathering it up with hand rakes; and from Jethro Tull down, many implements have been constructed to effect the same purpose and save manual labour; but for years past the encouragement given to intelligent and scientific implement manufacturers has been productive of many excellent machines for effecting such purposes, in an incredibly short space of time, and in the most perfect manner, amongst which we don't know of any that is more effective than Bentall's broadshare, which may be had of more than one size, to suit large and small occupations. This implement may be set to cut two, three, four, or more inches under the surface without turning it over or disturbing it, the effect of which is that after a couple of days in dry weather all weeds so cut are dried up, and are taken out and left on the surface by the action of the harrow, when they are gathered in rows by the common hay horse-rake, or in small occupations by the man rake, and may at once be carted and stacked in a corner of the field or carried to the steading and stacked, after which the land should be left fallow for a short time, to allow the seeds of annual weeds to vegetate; then be ploughed as deep as the nature of the soil will permit, and left rough all winter. It will be ready much earlier for the action of the harrow, grubber, and roller, to ensure perfect pulverisation, than if either ploughed in the ordinary way, or left, as is too often the case, unploughed till spring. It will require no further ploughing, the action of the grubber being sufficient and the most perfect disintegrator.

If it is desirable or necessary to apply lime, either pure or gas lime, marl or any other mineral, or putrescent manure, the best time to do so is after cleansing and before ploughing. Caustic lime or dry gas-lime, fresh from the works, applied at this period, will have the best effects in destroying the eggs or larvæ of the numerous destructive insects that prey upon the several crops in the spring and summer, and the subsequent workings with the grubber and harrow in the spring will thoroughly mix and incorporate them with the soil, besides having a mechanical effect in rendering the land more friable and porous, and giving plants an element in their necessary food, which of late years has been too much overlooked.—*Irish Far. Gazette.*

THE ROYAL BUCKS AND CENTRAL BUCKS UNITED ASSOCIATION.

MEETING AT AYLESBURY.

With the cattle still excluded from competition, and the absence of the Chancellor of the Exchequer from the dinner, the anniversary meeting at Aylesbury on Thursday, Sept. 20, went off rather tamely. Mr. Disraeli's lead, however, of last year was again taken up in the course of the evening, and there is little doubt, if the uses of the Royal Bucks Association were extended from the district to the county, but that a far more important demonstration on the part of the farmers would be the result. Not that, considering the adverse circumstances under which such meetings are just now held, the show at Aylesbury can be reported as on the decline, for in one leading feature this was particularly good. The exhibition of sheep was indeed pretty generally excellent, and such as would have done credit to a gathering of greater pretensions than a merely local trial of strength. It is clear enough that within the last few years some considerable progress has been achieved in the cultivation of the Royal Bucks flocks; and as we believe, quite as striking an advance would be observable in the breeding herds of the neighbourhood, the elements of success should be assured and the exhibitors emboldened to go farther afield. There are again some capital Berkshire pigs reared hereabouts, and if the Vale of Aylesbury be not as famous for horses as it is for ducks and geese, the incentive to improvement may be furnished in a little wholesome pressure from without. Certainly, when the Barons Rothchild put the services of a thorough-bred horse at the call of the tenants, and where a clever young one is tolerably sure to find his market, a better stand might be made in this way than was noticeable on Thursday. We have often seen the Buckinghamshire farmers go well over their own country, but they do not seem to care about sending much of the material on to the show ground, though the Baron regularly offers a cup for the best yearling, and the gentlemen of the hunt contribute a number of other premiums for both riding and cart horses. The latter section was by far the better represented of the two, with some great growing colts in the entry, and in many of these classes commendations were appended in the return to the award of first and second premiums. Amongst the more successful exhibitors of horses for agricultural purposes were Mr. Curtis of Fulbrook, Mr. Mumford of Chilton, Mr. Cox of Denham, Mr. E. Bennett of Rowsham, Mr. Kingsley of Boarscraft, Mr. Rose of Eythrope, Mr. Osborne of Chilton, Mr. Richardson of Chalkshire, and the Messrs. Denchfield. The mares and foals were about the weakest lot, though Mr. Kingsley's first is a nice level animal with a very good foal; while Mr. Rose's mare in work is a really sweet one, and Mr. Richardson's chesnut filly also very smart and taking. Mr. Cox's two-year-old colt has plenty of size, but Mr. Bennett's second-best here is almost too neat for a cart horse, but backed by the very essential rècommendation of light true action. A dozen of all ages showed in the Hunters' Class, with four or five very fair nags amongst them, though with the winner Mr. T. White's Young Venison horse far away the best. This is a great long-striding four-year-old, with plenty of bone and breeding, that should grow on into money, though we were sorry to hear a rumour as to his being objected to, on the ground of not having been sufficiently long in the possession of the exhibitor. Such wrangles smack more of leather-plating than farming; but if the protest should be sustained, the ten-guinea cup would go to Messrs. Denchfield's two-year-old North Lincoln filly, which was highly commended, another North Lincoln and a very nice one of Mr. Thorpe's being commended, a compliment which was also earned by Mr. E. Bennett's entry. Only three of the five yearlings named for the Baron M. A. de Rothschild's Cup came into competition, of which Mr. Elliot's King of Diamond's colt was declared to be the best; but the sample was not a high one, whilst surely such another dozen of hackneys were never seen together! Every man who owned an indifferent animal would appear to have thought it a duty to exhibit this in the hackney class. Here is a thorough-bred cast-off with a bad broken knee; there a cob that can neither walk nor trot; and for a third, a boring brute, whose rider, of a necessity, holds on by the bridle. For any further variety, you may have a used-up child's pony, a raw, unbroken three-year-old, or a butcher's beast that makes a deal of fuss over very little work. Mr. Harvey's piece of plate was accordingly withheld, much to the amazement of the lookers-on, who could scarcely be brought to understand that "nobody had got it."

To the merits of the sheep show, we have already spoken; but it would be unfair not to give a few further particulars. In the rams of any breed, Mr. Treadwell, of Winchendon, ranked first with a gay sheep, good in hand, with wool of great weight, and in really working condition; whereas Mr. George Wallis's second was a deal too fat, and not a nice handler. Still this was, on the whole, a very good class; but the ram-lambs, where Mr. Treadwell was first and second, were only a moderate lot. The fat ewes and fat wethers made up two very excellent classes, more particularly the wethers, some of which are pretty sure to be heard of again about Christmas time. Mr. R. Fowler, of Broughton, was first for ewes with a pen of fine character, and Mr. J. P. Terry second; while Mr. J. A. Mumford's prize wethers were admirable, barring only their being a little high on the leg, but the quality of Mr. Freeman's second was certainly not so good, though these sheep had great size. Mr. Terry's best long-wood ewes showed a deal of breeding; but Mr. J. Osborne's second prize pen were only just useful, and the competition in this class altogether so moderate that any of the commendations, so plentifully bestowed elsewhere, were not proceeded with. In the Down or Cross-bred ewes we came to the Cup, or best pen of sheep in the show—Mr. T. W. Stilgoe's Oxford Downs, five very fine sheep, but not matches, particularly about their heads, and it was not until the judges had them out one by one, that Mr. Terry's Cotswolds were discomfited. Mr. Tredwell's second prize pen were hardly in show trim, though a very useful lot; and Mr. Freeman's leggy theaves had little to beat, or they could have hardly finished first.

With Mr. Allender well out of the way, Mr. Clarke, of Haddenham, and Mr. J. K. Fowler had all the best of the pig show, with some really good Berkshires. Mr. Fowler's first prize sow in fact is as good a one as ever was shown here, being long and deep, with fine quality, as she should have from her pedigree, which combines Mr. Allender's and Mr. Bailey's (of Swindon) breeds. Mr. Clark's sow, in the open class, is also very good, with plenty of size, a capital coat, and deal of true Berkshire character. The other classes included the usual premiums for labourers and ploughing, where the Ransomes had it all to themselves in the Champion class—for butter, for root crops, and for pulled roots on the show-ground, which were not very remarkable for their excellence. The dinner, which took place for the first time in the really beautiful Market-hall, was graced by the presence of a few ladies, but the proceedings were of no public interest. The only noticeable point, in fact, beyond that which we have already referred to, was that when Mr. John Fowler mentioned the Malt-tax, he was met with a cry of "'Tis waste of time talking about that!"

The following were the judges of the day:—Horses: Mr. H. Corbet, Farmers' Club, London; Mr. T. Russell, Hodnell Manor, Southam. Sheep: Mr. Longland, Grendon, Northampton; Mr. C. Howard, Biddenham, Bedford. Pigs(and ploughing): Mr. C. Hedges, Eaton Bray, Dunstable; Mr. J. Godwin, Troy Farm, Bicester.

WETHERBY AGRICULTURAL SOCIETY.

The twenty-seventh annual exhibition of the above society was held on Friday, Sept. 17. Horned cattle were absent. The 127 horses included several very good animals, more especially in the agricultural, hackney, and hunting classes. The extra prize for entire horses for hunters was won by the Earl of Harewood. Mr. Simpson, of Spofforth, exhibited some fine Leicester sheep, and took the principal prizes. The total number of entries in all the classes was 354, and about £200 was given away in prizes.

JUDGES.—Horses: Mr. Wm. Atkinson, Barrowby, Leeds; Mr. Thomas Ellerby, Whitwell; Mr. Jacob Smith, Humberton; Mr. Charles Secker, Knaresbro'. Sheep and Pigs: Mr. Woods, Osberton; Mr. Dodds, Wakefield.

PRIZES.—HORSES.

Stallion for agricultural purposes, S. Strickland, Tadcaster.

Brood mare for hunters, M. Stables, Hall, Orchards; second, J. Hawking, Cowthorpe.

Brood mare for coach horses, R. Glover, Spofforth; second, Captain Gunter, Wetherby.

Brood mare for roadsters, G. Robson, Easingwold; second, T. Coates, Hutton.

Brood mare for agricultural purposes, J. Upton, Tadcaster; second, T. Greenwood, Rodley.

Three years old gelding for hunting, J. Harrison, York.

Two years old gelding for hunting, W. H. Park, Tadcaster; second, Lord Londesborough, Grimston.

Yearling colt for hunting, J. Newman, Bickerton Grange.

Three years old filly for hunting, J. Inman, Tadcaster; second, W. Wood, Tadcaster.

Two-year-old filly for hunting, W. H. Park; second, B. B. Haigh, Bramham College.

Yearling filly for hunting, J. Cooper, Plompton.

Three years old gelding for coaching, J. Harrison, York; second, T. Dales, Kearby.

Yearling gelding for coaching, B. B. Haigh; second, J. Beilby, Bramham.

Three years old gelding for agriculture, J. Elison, Knaresborough.

Two years old gelding for agriculture, R. Stephenson, Winghill Grange: second, H. Barber, Dunkeswick.

Three years old filly for agriculture, J. Upton; second, W. Hill, Wetherby.

Two years old filly for agriculture, W. Parker, Oxton; second, J. Hawking.

Yearling filly for agriculture, J. Upton.

Horse or mare for agricultural purposes, not less than four years old, first and second, Q. Clark, Bilton.

Hackney or riding horse, four years old and upwards, not less than 15 hands high, and qualified to carry 12 stones, R. Milward, Thurgarton Priory; second, Captain Gunter.

SHEEP.

LEICESTER OR LONG-WOOL.

Three-shear or aged ram, J. Simpson, Spofforth Park; second, Grimstone and Co., Wetherby.

Two-shear ram, first and second, J. Simpson.

One-shear ram, first and second, E. Riley, Beverley.

Pen of five ewes, having had and suckled lambs this year, J. Simpson; second, J. Coates, Wetherby.

Pen of five shearling wethers, W. Brown, Holme-on-Spalding-Moor; second, J. Norfolk, Tockwith.

Pen of five shearling gimmers, W. Brown.

PIGS.

Boar (large breed), J. Dyson, Leeds. Sow, J. Lakeland, Retford; second, M. Walton, Halifax.

Boar of the Bramham Moor or middle breed, C. W. Graham, Leeds; second, H. Keyworth, Leeds. Sow, B. Calvert, Bingley; second, H. Keyworth.

Boar (small breed), B. Calvert; second, W. Hatton, Addingham. Sow, Captain Gunter, Wetherby; second, J. Bullock, Bradford.

Store pig under fifteen months old, C. W. Graham; second, W. Hill, Wetherby.

Store pig (the property of an agricultural labourer or his widow), F. Lancaster, Micklethwaite; second, T. Cumberland, Wetherby.

EXTRA STOCK.

HORSES: J. Thrakray, Hessay, roadster gelding.

PONIES: R. Milward, Southwell.

SHEEP: G. L. Fox, Bramham, five shearling rams (Leicester); second, Captain Gunter, three gimmer lambs.

EXTRA PRIZES.

Stallion for hunters: The Earl of Harewood.

Hunter, from four to eight years old, warranted sound, and the property of a farmer or tradesman, horse dealers excepted: G. Robson, Easingwold; second, J. Inman, Tadcaster.

Prizes for leaping: W. Wood, Tadcaster; second, Sykes and Sheard, Drighlington.

Two-shear or aged ram, the property of a farmer residing within ten miles of Wetherby: First and second, J. Simpson, Spofforth Park.

Shearling ram, bred by, and the property of a farmer residing within ten miles of Wetherby: First and second, J. Simpson.

Tup lamb, bred by, and the property of a farmer residing within ten miles of Wetherby: M. Oddy, Spofforth; second, Grimston and Co., Clifford Mills.

Pen of five ewes, having had and suckled lambs this year, bred by, and the property of a farmer residing within ten miles of Wetherby: J. Simpson; second, J. Hannam, Kirk Deighton.

Pen of five gimmer lambs, bred by, and the property of a farmer residing within ten miles of Wetherby: J. Simpson; second, J. Hannam.

CLEVELAND AGRICULTURAL SOCIETY.

MEETING AT STOCKTON.

On Wednesday and Thursday, Sept. 19 and 20, at South Stockton-on-Tees, was held the Show for 1866. Cleveland has long enjoyed the highest celebrity for its breed of horses, known throughout England and the continent as the "Cleveland Bays," horses which are being constantly bought up by noblemen, gentlemen, and dealers, and taken to all parts, no district being without some animals of this breed. The shows of the society, therefore, have a peculiar importance attached to them.

The following gentlemen acted as Judges:

For Hunters and Roadsters—Mr. Jos. Atkinson, of Brandon, Alnwick; Mr. F. Oldacre, of Upper Brook-street, Grosvenor-square, London; and Mr. John Hutchinson, of Manor House, Catterick.

For Cleveland Bays and Coaching Horses.—Mr. Richard Hodgson, of Langton Grange, Northallerton; Mr. Wm. Lancaster, of Morton Grange, Northallerton; and Mr. John Johnson, of Brigham, Driffield.

For Draught Horses and Ponies.—Mr. Thomas Scott, of Broom Close, Boroughbridge; Mr. Jas. S. Dayrell, of West Ayton, Sherbourne Station; and Mr. Wm. Bradshaw, of Ganthorpe, Castle Howard.

For Implements—Mr. Richard Kay, of Forcett Valley, Darlington; and Mr. Thomas Scott, of Broom Close, Boroughbridge.

AWARD OF THE PRIZES.

HORSES.

Cleveland Bay brood mares, a silver cup value £10 10s., W. Harrison, Hutton, Rudby; second, £3, R. Watson, Maltby House, Stockton.

Cleveland Bay colt foals, £2, J. Porritt, Buckrush, Redcar; second, £1, T. Dennis, Broughton Grange, Stokesley.

Cleveland Bay filly foals, £2, J. Dodsworth, Great Stainton, Stockton; second, £1, W. Smith, Peyton Carr, Stokesley.

Cleveland Bay yearling fillies, £3, J. Waller, High Liven, Yarm; second, £1, W. Harrison, Hutton Rudby.

Cleveland Bay two-year-old fillies, £3, W. Hutchinson, Seamer, Yarm; second, £1, R. Webster, Commondale, Stokesley.

Cleveland bay three-year-old fillies, £4, J. Jackson, jun., Cliff House, Great Ayton; second, £2, J. Porritt, Buckrush, Redcar.

Coaching brood mares, £7, W. and F. Coulson, Gaterley Farm, Castle Howard; second, £3, G. Holmes, Newbegin, Beverley.

Coaching colt foals, £2, G. Holmes, Newbegin, Beverley; second, £1, J. Bell, Middlesbro'.

Coaching filly foals, £2, J. Jackson, jun., Cliff House; second, £1, J. Donaldson, Great Ayton.

Coaching yearling geldings, £3, Wm. Flintoff, Kirkleavington; second, £1, F. Field, Rosedale Abbey.

Coaching two-year-old geldings, £3, J. Leng, Houghton-le-side, Heighington; second, £1, J. W. Pease, M.P., Woodlands, Darlington.

Coaching three-year-old geldings, £4, T. Webster, Stainsby, Stockton-on-Tees; second, £2, B. Metcalfe, Ovington, Darlington.

Coaching three-year-old fillies, £3, M. Young, Skelton, Redcar.

Roadster brood mares, £7, J. Shepherd, Sadberge, Darlington; second, £3, P. Sturdy, Ingleby, Greenhow.

Roadster foals, colts or fillies, £2, R. Benton, Busby Grange, Stokesley; second, £1, J. Carlton, Hilton, Yarm.

Roadster yearling geldings or fillies, £3, W. Garbutt, Tunstall, Great Ayton.

Roadster two-year-old geldings or fillies, £3, A. Perkins, Belle Vue Cottage, Darlington; second, £1, J. Dixon, Cockerton, Darlington.

Roadster three-year-old geldings or fillies, £5, H. R. W. Hart, Dunnington Lodge, York.

Hunting brood mares, £10, J. B. Booth, Killerby Hall; second, £5, J. W. Pease, M.P., Woodlands, Darlington.

Hunting colt foals, £2, T. Calender, Oxbridge House; second, £1, J. Bradley, Normanby, Middlesbrough.

Hunting filly foals, £2, J. B. Booth, Killerby Hall; second, £1, J. Buckton, Lazenby, Redcar.

Hunting yearling geldings, £3, A. Robson, Alnmouth, Bilton; second, £1, J. Dixon, Cockerton.

Hunting yearling fillies, £3, J. B. Booth, Killerby Hall; second, £1, T. Blackburn, Black Horse, Broughton.

Hunting two-year-old geldings, £4, J. B. Booth, Killerby Hall; second, £2, R. Emmerson, Over Dinsdale, Darlington.

Hunting two-year-old fillies, £4, T. Hodgson, Great Broughton, Stokesley; second, £2, W. Vaughan, Middleton St. George, Darlington.

Hunting three-year-old geldings, £6, C. Coates, Cleasby, Darlington; second, £3, Rev. Charles Henry Ford, Bishopton Vicarage, Stockton-on-Tees.

Hunting three-year-old fillies, £5, J. Goldsbrough, Hutton Rudby; second, £2, J. Buck, Windle Beck, Ganton.

Draught brood mares, £7, G. Linton, Low-street, near Bedale; second, £3, R. Watson, Maltby House, Stockton.

Draught colt foal, £2, R. Hird, Brierton; second, £1, I. Wilson, Nunthorpe Hall.

Draught filly foal, £2, Mrs. Kitching and Sons, Whorlton; second, £1, G. Linton.

Draught yearlings, geldings or fillies, £3, Mrs. Kitching and Sons; second, £1, J. Donaldson, Great Ayton.

Draught two-year-old geldings or fillies, £3, W. R. I. Hopkins, Gray Towers, Nunthorpe; second, £1, F. Potts, Ovington Hall Brewery, Northumberland.

Draught three-year-old geldings or fillies, £4, F. Potts; second, £2, J. Donaldson.

Pair of young draught horses, mares or geldings, either two or three years old (the gift of Captain Chaloner, R.N.), £6, Messrs. Hopkins and Donaldson, Nunthorpe; second, £1, R. Watson, Maltby House, Stockton.

PONIES.

Horses or mares, under eight years of age, from 13 to 14 hands 2 inches high, £7, Lord De L'Isle and Dudley, Ingleby Manor; second, £3, J. Casson, Burgh-by-Sands, Carlisle.

Horses or mares, under eight years of age, not to exceed 13 hands high, £5, G. Masterman, Middlesbro'; second, £2, W. R. Innes Hopkins, Elton Hall.

Extra Prize.—10s. was awarded to Master F. L. Dodds, Stockton, for a brown pony.

SPECIAL PRIZES.

Pair of carriage horses, the bonâ fide property of the exhibitor, neither of which less than four, but under eight years of age, a silver cup, value £21, J. W. Pease, M.P., Woodlands, Darlington; second, £10 10s., J. P. Skeene, Stockton.

Six, seven, or eight years old hunting gelding or mare, by a thorough-bred horse, a silver cup, value £25 (given by the Hon. W. E. Duncombe, M.P., and Major Elwon), T. Sutton, Alwent, Darlington, for Voyageur; second, £5, J. Waldy, St. Gregory's, Bedale, for Sam Weller.

Five years old hunting gelding or mare, by a thorough-bred horse, a silver cup, value £15 (given by the president, W. R. I. Hopkins, Esq.), and £5 in money, H. Jewison, Raisthorpe, for The Moor; second, £5, G. B. Peirson, Baldersby, for Maroon.

Four years old hunting gelding or mare, by a thorough-bred horse, a silver cup, value £15 (given by F. A. Milbank, Esq., M.P.), and £5 in money, G. Holmes, Newbegin, Beverley, for Buffoon; second, £5, H. Jewison, Raisthorpe, for First Flight.

Hunting gelding or mare of any age, by a thorough-bred horse, the property of a member of the Cleveland Hunt, and which has been hunted during the last season with the Cleveland or Hurworth hounds, a silver cup, value £12 12s. (given by A. H. T. Newcomen, Esq.), Major Elwon, Skutterskelfe Hall, for Volunteer. A further prize of £5 5s. was given in this class by W. Vaughan, Esq., after the award of the cup, for the best leaper, to Fanny, the property of J. W. Anderson, Middlesbro'.

Roadsters, geldings, or mares, not more than 15 hands 2 inches high, and not less than four, but under eight years of age, qualified to carry 13 stones weight on the road, a silver cup, value £10 (given by J. W. Pease, Esq., M.P.), J. W. Pease, M.P., Darlington, for Whitefoot; second, £3, W. R. Innes Hopkins, Elton Hall, Stockton-on-Tees, for Charley. Mr. Pease, as he was the winner, liberally handed the cup over to the second-prize animal.

Ladies' hackneys, geldings, or mares, not to exceed 15 hands 2 inches high, not less than four, but under eight years of age, a silver cup, value £10 10s. (given by J. Dodds, Esq.), G. Brown, Darlington; second, £3, J. Ventress, South Stockton-on-Tees.

Horses, any age, sex, or breed, which leaped the artificial fences in the best style, £15, J. W. Anderson, Middlesbro'; second, £5, R. Bell, Layton Fields, Caldwell, Darlington; third, £1, J. Harrison, Sadberge, Darlington.

IMPLEMENTS.

Ord and Maddison, Implement Works, Darlington, £5, for a general collection. J. Weighill, Pickering, £ , for a grinding mill. Penney and Co., Limited, City Iron and Wire Works, Lincoln, £3, for an improved patent adjustible corn separator. Richmond and Chandler, Salford, Manchester, £2, for a chaff-cutter, with simple arrangement for altering length of cut. Ruston, Proctor, and Co., Sheaf Iron Works, Lincoln, £2, for one combined thrashing, finishing, and dressing machine, with drum, 4 feet wide. T. E. Colegrave, Bishopton Road, Stockton-on-Tees, and Newcastle-on-Tyne, £5, for a general assortment of implements. Hawkes and Spencer, Drill Manufactory, Tiverton, £3, for an improved 13-coulter patent chain corn drill, the principal feature of which is the chain delivery for grain. Busby, Newton, near Bedale, £1 for a cart, and £1 for a digging plough. H. Kearsley, Ironworks, Ripon, £2, for a reaping machine for small occupations. E. Sherwood, Kirkbridge, Bedale, £2, for a reaping machine. J. Newis, 15, Allison-street, Stockton, 10s., for an improved horse-rake. G. Dawson, Haughton-le-Skerne, Darlington, £1, for a double cheese press. R. Cuthbert and Co., Leeming, Bedale, £2, for a two-horse reaper. S. T. Stephenson, Middlesbro' and Stockton, £3, for a collection of wire fencing, &c. Richardson, Johnson, and Co., North Yorkshire Ironworks, Stockton-on-Tees, £3, for a brick and pipe-making machine. Bamlett, Thirsk, £2, for a reaping machine.

EAST CUMBERLAND AGRICULTURAL SOCIETY'S SHOW.

On Tuesday, Sept. 18, this society held its annual show, and in the early part of the day the weather was of a most cheering and promising character; but towards mid-day the deceptive sunshine was followed by heavy showers of rain, which, coupled with other causes, considerably interfered with the attendance of visitors, which was not so large as on previous occasions.

LIST OF AWARDS.

BLAMIRE PRIZE.

£10, "The Blamire Prize" for the year 1866, for the best-managed husbandry farm exceeding 300 acres in extent, situated in East Cumberland—Thomas Gibbons, Burnfoot.

SWINE.

Boars under four years old, first 40s., John Waugh, Warwick Bridge; second 20s., George John Bell, Nook.

Sows under four years old, to be in-pig or in-milk, first 40s., A. Wannop, Geltside; commended, J. Waugh, Warwick Bridge.

SHEEP.

First-shear Leicester tup, first 40s., second 20s., W. Lambert, Elrington Hall. Commended, Thomas Bell, Brampton Townfoot.

Second-shear Leicester tup, first 40s., second 20s., Thomas Thompson, Castlecarrock. Commended, Thomas Bell, Brampton Townfoot; Joseph Bell, Scalehill.

Third-shear Leicester tup, first 40s., W. Lambert, Elrington Hall; second 20s., Joseph Bell, Scalehill.

Best pen of three Leicester ewes, 40s., Robert Jefferson, Preston Hows.

Best pen of three Leicester gimmers, first 40s., Thomas Thompson, Castlecarrack; second 20s., Robert Jefferson, Preston Hows.

HORSES.

Brood coaching mare, with foal at foot—first 60s., R. and J. Little, Guards; second 20s., T. J. Steel, Southerfield.

Brood cart mare, with foal at foot—first 60s., G. H. Head, Rickerby; second 20s., John Hodgson, Midtown. Commended, C. and J. Armstrong, Carlisle.

Brood coaching mare in-foal—first 60s., Thomas Gibbons, Burnfoot; second 20s., George Smith, Papcastle. Commended, George Graham, Cubby Hill.

Brood cart mare in-foal—first 60s., G. H. Head, Rickerby; second 20s., James Moffatt, Dormanstead. Commended, Wm. Ellwood, Stainton.

One-year-old harness colt—first 20s., William Graham, Gapshields; second 10s., T. H. Hetherington, Carlton.

One-year-old saddle colt—first 20s., Thos. Gibbons, Burnfoot; second 10s., T. H. Hetherington, Carlisle.

One-year-old saddle or harness filly—first 20s., J. Boustead, Linstock; second 10s., T. Milburn, Grinsdale.

One-year-old cart filly—first 20s., Isaac Fawkes, Smalmstown; second 10s., Messrs. Bell, Rosebank.

Two-years-old harness colt—first 40s., John Dennison, Newby; second 20s., John Pearson, Langrigg.

Two-years-old saddle colt—first 40s., Thomas Milburne, Grinsdale; second 20s., R. B. Faulder, Thursby,

Two-years-old saddle or harness filly—first 40s., T. H. Parker, Warwick Hall; second 20s., Wm. Gibson, Thackwood Nook.

Two-years-old cart colt—first 40s., John Benson, Grindon Hill; second 20s., Thomas Wannop, Brunstock. Commended, Joseph Black, Longburgh.

Two-years-old cart filly—first 40s., Isaac Fawkes, Smalmstown; second 20s., Wm. and Archibald Skelton, Drumburgh.

Three-years-old harness colt—first 40s., Thomas Mark, Durdar; second 20s., T. T. Selby, Oughterside House.

Three-years-old saddle colt—first 40s., John Newton, Chollerton; second 20s., Ferguson Feddon, Evening Hill.

Three-years-old saddle or harness filly—first 40s., Richard Waugh, Seat Hill; second 20s , Thomas Gibbons, Burnfoot.

Three-years-old cart colt—first 40s., R. Shadwick, Moorhouse Hall; second 20s., John Hodgson, Hollybush.

Three-years-old cart filly—first 40s., Samuel Blaylock, Wormanby; second 20s., R. and J. Little, Guards. Commended, Joseph Henderson, Moorhouse.

One pound, added to a sweepstakes of 10s. each, for one-year-old entire colts—Joseph Stordy, Drawdykes Castle.

HURDLE-LEAPING.

"Fifteen pounds, added to a sweepstakes of 10s. each, for horses of all ages, suitable for hunting, and required to leap hurdles four feet high not less than three times. Four-years-old horses to carry 11 stone, five years old and upwards 12 stone. The rider to be mounted in proper hunting costume. A handsome silver-mounted whip will be presented to the rider who appears in the neatest and most appropriate costume." First, Thomas Sutton, Alwent; second, John Hyslop, Greensburn. Commended, the Marquis of Queensbury.

HACKNEY PRIZE.

Three pounds, added to a sweepstakes of 10s. each, for the best hackney of any age, not to exceed 15 hands 1 inch, to be brought into the ring mounted—first, Robert Bendle, Carlisle; second, Joseph Casson, Burgh. Commended, Joseph Casson

FOUR-YEARS-OLD HORSE PRIZE.

Three pounds, for the best four-years-old saddle or harness colt or filly—first, J. P. Foster, Kilhow; second, Messrs. Bell, Rosebank.

PONY PRIZE.

Two pounds, added to a sweepstakes of 10s. each, will be given for the best pony of any age, height not to exceed 13½ hands—first, Joseph Robinson, Moorthwaite; second, Joseph Scott, Carlisle.

SWEEPSTAKES.

Sweepstakes of 10s. each, for the best saddle or har yearling colts or fillies. Thomas Gibbons, Burnfoot.

Sweepstakes for three-years-old saddle or harness colts fillies. John Newton.

Sweepstakes for saddle or harness foals—T. H. Par Warwick Hall. Commended, J. T. Steel, Southerfield.

Sweepstakes for two-years-old cart colts or fillies— and second, Joseph Black, Longburgh.

Sweepstakes for cart foals—William Riley, Mossband H

DERBYSHIRE AGRICULTURAL SOCIETY.

MEETING AT DERBY.

The annual show was held on Wednesday, Sept. 19, in the Derby cattle market. Not the least element of success was the fine weather, and several thousands of persons visited the exhibition during the day. The competition showed a considerable increase over that of last year.

The total number of horses entered was 170, and the show in this particular respect was one of the best that has been held in the Midlands for many years past. The first prize for stallions for hunting purposes was carried off by Mr. Henry Wardle's Cawood by The Cure, out of Brandysnap, by Muley Moloch. The trials for the hunter's prize, which took place about one o'clock, attracted a great deal of the attention of the public, but the ordeal developed only about six good jumpers. Many of the horses would not take the fences—in all probability a fact that was due to the shouting of the people and the crowd which had gathered round, as there is no doubt the animals would do their work straight enough in the field. The horses for agricultural purposes were a good lot of strong and useful animals, and there were many commendable specimens among the hacks, cobs, and ponies.

The number of entries of sheep was not quite so large as last year, but there was nevertheless some excellent mutton displayed. Particularly noticeable were the shearling ewes, and many of the prize-winners were good useful old sheep, chiefly of the Leicester-and-Lincoln cross. The Down lambs were also highly commendable.

The pigs comprised the Berkshire, Lincolnshire, and Yorkshire breeds, and it was noteworthy that there was not an absolutely bad lot to be found in any of the pens; while a litter of the unusually large number of 19 was exhibited.

The show of poultry may be also said to have been good for the particular period of the year, when the young birds are hardly ripe, and the old birds are too far gone for exhibition purposes. The ducks and game-fowls were superior, but in the Dorkings there was a perceptible falling off.

There was a large show of implements for agricultural purposes. The first prize for a "collection" was won by Messrs. J. G. Haywood, of Derby, whose specimens of machinery occupied a large area, and who had a tent in which they exhibited a variety of choice and ornamental ironwares and other articles. Messrs. Ratcliffe, of Derby, took the second prize; and medals were awarded by Henry Campion of Alderwasley, Mr. Fisher of Loughborough, and Mr. Woolley of Allestree.

There were also classes for cheese, butter, and wool.

The dinner took place at the Corn Exchange, at three o'clock, Lord Denman presiding.

PRIZE LIST.

JUDGES.

AGRICULTURAL HORSES: Mr. Ladkin, Lutterworth; Mr. Bland, Thorpe Lodge, Newark. HUNTERS AND HACKS: Mr. J. Story, Lockington Hall; Mr. T. Wright, Wanlpi, Leicester. SHEEP (long wools): Mr. Dixon, Barff-house, Beverley; Mr. Cresswell, Ravenstone. Short wools: Mr. May, Elford-park, Tamworth; Mr. Byrd, Lees Farm, Stafford. PIGS: Mr. E. Lowe, Comberford-mill, Tamworth; Mr. J. Whitworth, Measham, Atherstone. POULTRY: Mr. E. Lowe, Comberford-mill, Tamworth; Mr. J. Whitworth, Measham, Atherstone. IMPLEMENTS: Mr. J. Faulkner, Mr. Hall, Mr. Nuttall. GENERAL REFEREE: Mr. C. W. Thacker, Elford-park, Tamworth.

HORSES.

Stallion for agricultural purposes, first £10, Mr. Coo Draycott Fields; second £5, F. Nix, Alfreton.

Stallion for hunting purposes, first £10, H. Wardle, Burt on-Trent; second £3, Wm. Barron, Barrowash.

Brood Mare and Foal for agricultural purposes, first £5, Gilman, Longford; second, J. Vickers, Willington; 3rd, Bryer, Vicar Wood.

Two-year-old Gelding or Filly for agricultural purp first £5, R. Marple, Ashton-on-Trent, also cup for best horse; second £3, J. Beeston, Mackworth; third £2, A Eley, Longford.

One-year-old Gelding or Filly for agricultural purposes, £5, J. Hawksworth, Barton Blount; second £3, J. Haw worth; third £2, T. Winfield, Dale Abbey.

Brood Mare and Foal best fitted for breeding hunters hacks, first £5, J. Pegge, Littleover; second £3, M. Au wood, Weston-on-Trent; third £2, J. Bryer, Vicar Wood.

Pair of Horses for agricultural purposes, first £5, J. Gar Thompson, Chilwell; second £3, J. Porter, Weston-on-Tre third £2, M. Audinwood, Weston-on-Trent.

Gelding or Filly, of the value of £50, not thorough-bre above three and under four years of age, 1866, first £5, C Palmer, Calke.

Gelding or Filly, not thorough-bred, above two and unde three years of age, first £3, J. Hawksworth; second £2, J. G Mitchell, Newton Solney.

Best Hunter, four years old and upwards, following Mr Meynell Ingram's or Mr. Musters' hounds, first £10, T. L. Cart lich, Derby; second £5, J. Haywood, jun., Derby; third £3, G. M. Meynell, Langley.

Cob, not exceeding 14.2 hands, for riding or harness pur poses, first £3, T. Worthington, Derby; second £2, S. Wade, Mickleover.

Cob or Pony not exceeding 13 hands, first £3, T. Worthington, Derby; second, £2, Devas Horace, Alvaston.

Colt or Filly, not thorough-bred, above one year and under two, first £3, J. Stevens, Dale Abbey; second £2, M. Audinwood.

Hack or Roadster, above 4 years, first £3, G. J. Mitchell, Newton Solney; second £2, G. Rossell, Sandiacre.

SHEEP.

Five Long-woolled Breeding Ewes, having had Lambs in 1866, and suckled them up to the 1st of June—first, £3, M. Scorer, Scarcliffe, also Cup for best Long-wools; second, £3, J. Milnes, West Hallam; third, £1, G. Bryer, Markeaton.

Five Long-woolled Theaves—first, £3, M. Scorer; second, £2, C. Bosworth, Dishley; third, £1, G. Bryer.

Five Long-woolled Ewe Lambs—first, £2, C. Bosworth; second, £1, J. Milnes.

Long-woolled Ram of any age above a Shearling—first, £2, E. Foster, Alkmonton; second, £2, C. Mellow, Atlow; third, £1, T. Tomlinson, Hall Fields.

Shearling Long-woolled Ram—first, £3, W. Dester, Seckington; second, £2, E. Foster; third, £1, E. Foster.

Five Long-woolled fat Wether Sheep, not exceeding twenty-two months old—first, £2, C. Bosworth; second, £1, C. Bosworth.

Five Breeding Ewes, having had Lambs in 1866, and suckled them up to the 1st of June—first, £3, J. Rose, Ash;

second, £2, F. Camp, Etwall; third, £1, G. J. Mitchell, Newton Solney.

Five Short-woolled Theaves—first, £3, J. Rose; second, £2, R. Hall, Wilne; third, £1, G. J. Mitchell.

Five Short-woolled Ewe Lambs—first, £2, J. Broadhurst, Foston; second, £1, F. Camp.

Short-woolled Ram of any age above a Shearling—first, £3, J. Ironmonger, Measham; second, £2, J. Ironmonger; third, £1, R. Hall.

Shearling Short-woolled Ram—first, £3, J. Ironmonger; second, £2, J. Ironmonger.

Five Short-woolled fat wether Sheep, not exceeding twenty-two months old—first, £2, R. Hall; second, £1, R. Hall.

PIGS.

Boar of any age—first, J. Hawksworth; second, J. T. Poyser, Burton-on-Trent.

Sow of any age—first, W. T. Cox, M.P., Spondon; highly commended, J. Hawksworth; commended, R. Hall.

Three Breeding Pigs of one litter, not exceeding seven months old—first, Jos. Bowmer, Burley; second, J. Hawksworth; highly commended, Dr. Hitchman, Mickleover; commended, W. Redshaw, Longford.

Boars of any age—first, M. Walker, Stockley; second, J. Faulkner, Bretby.

Sow of any age—first and second, J. Faulkner.

Three Breeding Pigs of one litter, not exceeding seven months old—first and second, J. Faulkner.

Pigs the property of agricultural labourers whose personal earnings do not exceed 15s. per week—first, C. Hardy, Chaddesden; second, S. Hollingworth, Cheddesden; third, J. Morley, Thulston; commended, G. Marsh, Quorndon.

ANOTHER THEORY AS TO FINGER-AND-TOE, OR ANBURY.

SIR,—In reference to the diseases of finger-and-toe and anbury (a name, by-the-bye, of surely recent manufacture, or very seldom used) with which the turnip crop this year is so seriously affected, many opinions are given both publicly through the press, and privately in conversation. A week or two ago, I saw in your Journal the opinion of a correspondent expressed that the diseases arose from the want of saline matter in the soil. What is more frequently assigned as the cause is the too frequent repetition of the same crop in the soil, in consequence of the five years' rotation system. I am not prepared to say that the disease is not aggravated by the absence of salt, and by the too frequent recurrence of the same crop; but I am inclined to think that the true cause lies much deeper than that, and is the result of atmospheric or meteorological influences. I can adduce one instance which militates very strongly against the "rotation" theory. I have this year under turnips a piece of ground, and very good ground too, which has not borne a similar crop for at least twenty years, and perhaps many times twenty years before that.

The braird came up well, and bulbing began beautifully; but the fell disease soon made its appearance, and now fully one-third of the crop is badly affected, and perhaps not above one-half of it entirely free from disease. The crop, to use the language of the agriculturist, was laid down with about thirty loads of farm-yard manure—the best means of applying to the roots of a plant all that is necessary to its future development—[illegible] bushels of bones, and a few hundred-weight of superphosphate per acre.

This application of manures, and the fine appearance of the crop as it grows up, are quite sufficient to satisfy me that nothing of human application, at least, was awanting to promote the health and growth of the plant. If a crop, no matter what it is, suffers from the want, or rather, I should say, from an insufficient supply of any substance chemically necessary to its composition, it will at *no* stage of its existence present a healthy appearance.

I am thus satisfied that neither of the two theories is sufficient to explain the cause of the failure of my turnip crops. As I have said already, I believe it is purely atmospheric or meteorological. The piece of ground in question slopes pretty abruptly to the south, but has considerable depth of mould, and is quite dry. I have therefore come to the conclusion that its exposure has something to do with it, a conclusion which is being daily strengthened by the fact that, wherever I go, I see that south-lying fields are much more affected with disease than those exposed to the north. In a field not many hundred yards from my own, but which has a northern exposure, I made a long and careful search, and failed to find even the slightest traces of disease. Such of your readers as have an elementary knowledge of chemistry are aware that substances very different in their nature and effects can be formed from the same materials, but combined in different proportions, and that in many cases all that is required to effect this difference is a slight increase of heat by the experimenter. The soil is a huge natural laboratory, into which the various substances required to enter into the composition of any plant are placed, while heat, light, and moisture are the agencies employed in converting these materials into the substance of the plant.

In respect of these three things, this season has been very peculiar. Although at first very dry, immediately after the turnip-sowing season it became very wet, and since that time, with slight intermissions, the ground has been in a condition bordering on saturation. The amount of direct sunshine has, during the latter part of the season, been very small, and the temperature extremely variable, at one time oppressively high, and at another time very low. For some time after the hoeing season, the amount of heat and moisture was very great, the surface of the ground, in fact, was almost like a vapour bath, and a large amount of nourishment literally forced upon the plants, both through the roots and the extended leaves. With the fall of the temperature the super-abundant supply of nutriment ceased, and the roots, whose functions were before exerted to the utmost, being now comparatively unused, contracted the disease, which, when it assumes the shape of excrescences on the bulb and enlargement of the roots, is called finger-and-toe, or anbury; for both, I believe, spring from the same cause.

From the fact of insects being found in the excrescences, some people think that they are the cause of the disease; but if they would only reflect that in all instances of decay, whether animal or vegetable, insects of some sort or other effects a lodgment, they would soon come to believe that they are part of the effect, but have no share in the cause.

Had the turnip plant been the only one affected in that manner this year, I should not perhaps have questioned the opinion of those whose experience in the rearing of turnips is much greater than mine; but several other plants are similarly diseased. In the month of June I planted out some cauliflower and broccoli, which throve most amazingly for a while; but soon after the atmosphere became dry, the leaves, not of one or two, but of all of them, fell helplessly to the ground. During a moist day, they all stood erect again, only, however, to fall flatter than before on the first outbreak of sunshine. On pulling some of them up, I found the roots more like tubers than fibres, very much resembling, in fact, a partially grown stem of kidney potatoes.

Another plant, whose case, however, will not excite much sympathy in the farmer, is the common "Sinapis arvensis," or "Runch," as it is called in some districts, which is very much liable to this form of disease; and many more might, no doubt, be found, if we would only put ourselves to the trouble of looking for them.—LEX NATURÆ, in the *Banffshire Journal.*

FREE TRADE AND THE STEAM-PLOUGH.

At the meeting of the Woodstock Agricultural Association, last Tuesday, the Duke of MARLBOROUGH said he would take this opportunity of saying a few words on the subject of English agriculture. There could be no doubt that the system pursued for many years past in this country had been practically of very great use. They were not assembled there for the purpose of minutely discussing political questions, but at the same time all must acknowledge that a great change had come of late years over the minds of the people, and that it had been deemed necessary to relax many of those protective duties which were formerly a part of the commercial system of the country. Now, although the Conservatives opposed the change in the first instance, thinking that it was fraught with danger and premature, yet he was not prepared to say that the experiment had altogether failed. It had, he believed, been attended by great benefits, having increased our commercial prosperity and cheapened the prime necessaries of life. But, at the same time, we ought to take care not to run into the opposite extreme by altogether neglecting the agricultural importance of the country while encouraging its manufacturing prosperity. It had been said, "If you increase the commercial prosperity of the country and give facilities to manufactures, you will find food flowing into the country from every part of the world; money will be abundant; and you need not trouble yourselves about the production of food." But we ought to observe some of the signs of the times. The effect of the free-trade principle has been to discourage to some extent the growth of cereal crops in this country, and we were now rather more dependent upon our neighbours and less dependent upon ourselves than used formerly to be the case. The time, however, might be arriving when our supplies of corn might be cut short, owing to European complications and bad harvests, or other complications in the western hemisphere, to which we had been accustomed to look for large supplies. Therefore, he thought the state of the world at the present time ought to be a warning to us. When the price of wheat was rising, and might continue to rise to an extent altogether unprecedented of late years, it was, in his judgment, of great importance to look to the cultivation and production of corn in our own country. And although it was impossible to say that the duties formerly levied upon corn which was imported into this country would ever be reimposed, yet, seeing what was passing around us, we ought to take warning, bearing in mind the fact that English agriculture was the backbone of English prosperity, and that it was to the great meat-producing and corn-producing districts of this country that we must primarily look for the maintenance of our national prosperity.

Mr. HENLEY said, he believed that fifty years had passed away since he first used to come down to Woodstock to attend agricultural meetings. He was not, however, now referring to the gatherings of this particular association, but to an old county society, the meetings of which were held at Woodstock in alternate years. On those occasions they used to dine at three o'clock, in a barn on the top of the hill at Old Woodstock, after which they took tea at some of the hospitable houses in the town, and then rode home, as gentlemen ought to do. He was sorry to say that, on looking round, he saw but few—indeed, he might say that he did not see one—of the faces which used formerly to be familiar to him on these occasions. His Grace the Duke of Marlborough was the fourth holder of the title whom he remembered; and he had also been acquainted with three generations of his friend the chairman's family. These things told him how old a man he was. He thanked God that he was able to be there upon the present occasion. He was glad to hear that one part of the business of the meeting, viz., the ploughing, had given satisfaction. He was told that it had been very good indeed. Perhaps he might be permitted to refer to a matter which was of the greatest importance to all agriculturists, and, consequently, to the whole of the community. He regretted very much that the possessors of the steam-ploughs did not bring them to meetings like the present. It would be of the greatest advantage to all agriculturists to be able to see on these occasions what would be the result of the application of the motive-power of steam to ploughing, when it came fairly into competition with twenty or thirty good ploughmen of the neighbourhood, and whether it did actually make a better, a worse, or the same kind of seed-bed as the old plough did. If they could observe for two or three years the manner in which the steam-plough did its work, great advantages might accrue, because it seemed to him that the invention had now come up to a certain point and there stood still, going neither backwards nor forwards. This was an invention in which the agricultural community were greatly interested; and it ought therefore to be thoroughly tried and tested in every way. Every man ought to see these ploughs at work, in order that he might come to a sound conclusion as to whether they would be a gain to him or not. This was a matter of greater consequence, because they must all feel deeply that it would be highly advantageous not only to themselves as agriculturists, but also to the country generally, that the produce of the country should be as large as possible. Now, the best security for an increased produce was that the ground should be well tilled, and nothing therefore could be of greater importance than for them to see these different apparatuses at work year by year in honourable contest with the old plough, upon ground sometimes wet and sometimes dry, and in all its different conditions. In that way, he believed, they would be able to form a sound judgment on this important subject. He had so recently, at another place in the county, touched upon one or two matters of interest in what was called the political world, and what he said had been so fully reported in *The Times*, that he would not refer to them again, for he did not like giving them a second dose of the same physic. That was always a disagreeable matter to those who administered the dose, but it was ten thousand times more disagreeable to those who had to swallow it. Various matters of stirring interest were springing up day by day, and even men who were as old as he was felt the necessity of moving with the times. Scarcely any man could say that in the present day he stood still for a minute. Something which he thought fresh and new yesterday was superseded to-day by something which in its turn would be also superseded. Persons in every rank of life could not fail to perceive the rapid changes which were taking place. The great difficulty was to be able to exercise one's judgment and detect real faults, because a great deal of what appeared at first sight to be plausible, turned out, when one grasped it, to be nothing more than a bag of wind. With regard to all the great questions which now awaited settlement, he hoped care would be taken to weigh the interests of all the parties concerned. Thus the great agricultural interest certainly ought not to be overlooked, because it should be remembered that in numbers, in property, and in the amount of labour employed the agricultural interest was second to none. Indeed, he believed he might with justice say that it stood first of all. And therefore he hoped that they who were not apt to be so noisy and to make so much uproar as some other interests, would not be forgotten by those who guided the destinies of the country. The agricultural interest might, as his Grace had remarked, be fairly called the backbone of the country. It always had been so, and he believed it would always continue to be so, because he felt quite sure that the qualities it possessed rendered it deserving of that position. His opinion of his countrymen was such that he believed they would always look carefully to see what was right and good, and that, having found it, they would not suffer it to be unjustly trampled on by any interest, however strong that interest might be. He could not hope to attend the Woodstock meeting many years longer; but he should never forget the kindness he had experienced in that part of the county, which lay at a distance from his own home.

CHIPS.

FACTS AND FIGURES CONNECTED WITH MANURES.

(a) *Principles of Manuring.*—Plants are formed of two distinct parts, organic and mineral. The organic is made up of all the constituents which are capable of being consumed, and their chemical parts are composed of what are called the four elements—carbon, hydrogen, nitrogen, and oxygen. Of the organic elements carbon and nitrogen are the chief, and are obtained principally from carbonic acid and ammonia. Of these, carbonic acid gas is found in immense quantities in what may be called the "laboratory of nature." When we breathe we form it; when we consume our fuel we add to it; and each heap of decaying vegetable or animal matter swells the volume of supply. Ammonia is combined of two gases, hydrogen and nitrogen, in the proportion of 14 parts of the former to 1 of the latter. Of these gases hydrogen is one of the two constituents of water, oxygen the other; 1lb. of the former to 8lbs. of the latter forming 9lbs. of water. From this will be seen the affinity which water possesses for ammonia—a wise arrangement, as by its aid we can draw upon the stores of nitrogen existent in the atmosphere. Ammonia may be and is formed artificially, and possesses a high value as a manurial agent. Our chief natural supply is from the excreta of the animals of the farm and of man. Hence, in allowing these to go to waste, as we do nationally, we may be said to throw away vast supplies of manure. Ammonia is also found wherever decomposition of matter goes on: it is present also largely in rain-water, and snow is popularly believed to be peculiarly rich in it. Hence the term by which snow is known in some districts as the "poor man's manure." The inorganic constituents of manure are also called the ash, or mineral constituents: they are made up chiefly of sulphur, phosphorus, iron, lime, magnesia, potash, and soda; but to these may be added, as minor constituents, silica, alumina, sulphuric acid, phosphoric acid, and chlorine. The elements of the ash of plants exist only in the soil, and no portion is derivable from the atmosphere, as in the case of the organic portion. They exist in the soil in the form of salts; these being formed by the combination of an acid, as carbonic, with an alkali, as lime, the resulting combination in this case forming what is termed a carbonate of lime. From the elements of the organic and the inorganic matters which exist around us plants are formed, both being absolutely necessary to this formation, the absence of either being inimical to growth. Hence may be seen that the division of plants into two parts, as above-named, organic and inorganic, has no actual existence, but has been adopted by scientific men for scientific purposes. The sources of plant-food being, as we have seen, in the atmosphere and in the soil, the question has arisen, From which is the principal amount supplied? and this is one of the vexed—the great questions of agricultural science, and which has been discussed with, shall we say, more of the warmth than the courtesy of argument? The advocates of the opinion which maintains that the plant-food is obtained chiefly from the atmosphere range themselves under the banner, so to say, of the great continental chemist Liebig, the able originator and exponent of the theory. Those who, on the contrary, maintain that the chief elements of plant-food are supplied by or from the soil range themselves under the banners of the celebrated English chemists, Lawes and Gilbert, the no less able exponents of that theory. This is not the place to glance, even in briefest fashion, at the discussion which has arisen on these two theories. Suffice it here to say, that Liebig and his followers, believing that the chief organic elements of plants, ammonia and carbonic acid gas, are supplied in boundless quantities from the air, it is the farmer's, or should be the farmer's, great aim to supply the soil with the mineral or ash constituents; for, according to his theory, the "crops on a field diminish or increase in exact proportion to the diminution or increase of the mineral substances conveyed to it in the manure." From this it may be deduced that the fear is that the mineral elements naturally present in the soil are scanty, and may in time be exhausted; which is simply another way of stating Liebig's celebrated belief, that if his theory of manuring is not attended to, the soil of England will ultimately become exhausted of its mineral constituents. The opposite theory of Lawes and Gilbert is, that the mineral supply of food is not the one likely to become deficient—that the nitrogen or organic element is the one which is likely to become so. Hence also may be deduced the opinion that the mineral supplies of plants exist in the soil in a practically inexhaustible condition. From this brief statement of the opposing or opposite theories of Lawes and Liebig, it will be seen that the opinion held by some is not correct, that the difference between those great chemists is, that the one (Liebig) maintains that the organic elements of plants are not necessary to their full growth, and that the other (Lawes) maintains that the mineral constituents are not so; the fact being that both Lawes and Liebig are at one in the belief that both the organic and the ash elements are absolutely and essentially necessary, the difference between them being that Lawes maintains that the ash constituents are naturally abundant in the soil, and do not require specially to be supplied in it, Liebig holding precisely the reverse. As in all other controversies so in this, much can be, as has been, said on both sides, and if space permitted it would be undoubtedly interesting, as it would be valuable, to give here a *resumé* of it; but we must simply here content ourselves with the statement that the controversy has been practically decided by the farmers of Great Britain in favour of Lawes as against Liebig, and that their belief or creed in agricultural chemistry may be stated thus, "Nitrogen is the principal characteristic of a manure for corn, and phosphorus in one for turnips;" in other words, ammonia for corn and phosphates for turnips. Some very curious and very suggestive considerations on this point of belief have been offered in a recent paper in an agricultural journal, and to this effect—that the supply of ammonia in the manure is not so essential in the summer time, as experiments go to prove that ammonia exists in the atmosphere in much greater abundance then than at other seasons, and that the leaves of plants have greater power to draw ammonia from the air at this period. From this will be seen the scientific reason for a well-known farming fact, that it is best to apply ammoniacal manures in early spring, phosphatic manures in summer, the latter having more power in the summer than at other seasons. The same authority points out what is very suggestive, that annuals draw least from the atmosphere, perennials most; the converse holding, that annuals draw most from the soil, perennials the least. Hence is deducible the scientific reason for another well-known farming fact, that perennials (as grass) nourish the soil, annuals (as turnips), impoverish it.

(*b*). *Kinds or Classification of Manures.* — The classification we follow here is that of Stockhardt, the principle of which is arranging them according to their action and composition, the most powerful being named first, the weakest last. Some of the constituents are found under more than one head, indicating that they act in more than one way; as for instance, guano is a nitrogenized and at the same time a phosphatic manure. Class first: Nitrogenized or *forcing manures*, the sub-classes of which are—(*a*) Substances containingammonia; quickly-acting manures; asammoniacal salts, Peruvian guano, soot, blood, flesh, wool, liquid refuse of gas-works, putrid liquid manure, urine, short or rotten dung. (*b*) Nitrogenized substances easily putrefying, and tolerably quick in their action; as bone-shavings, glue, bones, oil-cakes, fresh urine, ditto liquid manure. (*c*) Nitrogenized substances decomposing with difficulty, and slow in their forcing action; as woollen rags, half-inch bones, fresh or long farm-yard manure. (*d*) Substances containing nitric acid, quick in forcing action; as saltpetre, nitrate of soda. The second class is carbonaceous manures; as common farm-yard manure with much straw, leaves, &c., sawdust, green crops turned into the soil as manures, peat, and vegetable detritus. The third class is made up of substances containing much potash, which are strong in their forcing action—as potash, nitre, malt-dust, urine, wood-ashes, leaves, grass manures, road-detritus, compost, burnt clay, and some kinds of marl. The fourth class is made up of substances containing soda chiefly, which are less effective in action than those already named, as common salt, nitrate of soda, urine, several minerals, and the refuse of soap-factories. The fifth class is the important one of phosphatic manures, which are effective in forcing grain or seed-growing plants, and is made up of substances as follows: Burnt bones, animal-black or charcoal, sugar-making refuse, phosphate, apatite, coprolites, fresh bones, bonedust, various kinds of guano, animal refuse, oilcakes, malt-seeds, human excreta, farmyard manure, urine, wood-ashes, straw, leaves. The sixth class is made up of substances containing sulphuric acid, which may be used partly to fix ammonia in other substances, and partly as manures themselves; as gypsum, sulphuric acid, green vitriol, coal and peat-ashes. The seventh class is made up of calcareous substances; as burnt lime, chalk, marl, gypsum, coal and peat-ashes, road-scrapings, gas-lime. The eighth class is siliceous manures; as coal and peat-ashes, farmyard manure, sand, straw, &c. The above, it will be seen, is a somewhat arbitrary arrangement; indeed, any classification of manures is sure, of necessity, to be so, from the reason already stated. Some, undoubtedly, are very special in their action, while others combine the manurial agents of a variety of substances. Of this class is farmyard dung or manure, which has, indeed, been called a "universal manure," as containing all the substances requisite to promote plant-life. Of the mineral, inorganic, or ash constituents we find all existent in farmyard manure, not one being absent; and of organic constituents some which are readily soluble in water, containing a large per-centage of nitrogen, and others which contain substances not soluble in water, and having a low per-centage of nitrogen. From the first of these ammonia is obtained, the second assisting in the formation of humic acids and other organic substances which make up the mass of brown, soft vegetable substance called formerly, and by some chemists still called, humus. It is a fine instance of the adaptability of one department of farming economy to another, the fact that the manurial constituents of farm-refuse are present in that state of combination which is exactly required in the production of farm-produce. And this combination is so exquisitely arranged that, in the words of one of our most distinguished agricultural chemists, it is "difficult, if not impossible, to imitate it by art;" and this is precisely one of the reasons, if not the only reason, "which renders farmyard manure a perfect as well as a universal manure." The fertililising substances of farmyard manure are met with in such varying proportions and combinations, that it is not easy to find an analysis which perfectly represents what farmyard manure is. As a fair instance of the composition of farmyard dung. we give here Professor Voelcker's analysis of mixed dung (cow, pig, and horse), well rotted:

Water		75.42
Soluble organic matter		3.71
Containing nitrogen	.297	
Equal to ammonia	.360	
Soluble inorganic matter		1.47
Insoluble inorganic matter		12.82
Containing nitrogen	.309	
Equal to ammonia	.375	
Insoluble organic matter		5.58
		99.00

In this sample the total amount of nitrogen was .606, eqnal to ammonia .735. The following is an analysis of a sample of fresh farmyard manure, fourteen days old, made up of horse, pig, and cow-dung:

Water		66.77
Soluble organic matter		2.48
Containing of nitrogen	.149	
Equal to ammonia	.181	
Soluble inorganic matter (ash), containing of—		
Soluble silica	.237	1.54
Phosphate of lime	.299	
Lime	.066	
Magnesia	.011	
Potash	.573	
Soda	.051	
Choride of sodium	.030	
Sulphuric acid	.055	
Carbonic acid, with loss	.218	
Insoluble organic matter		25.76
Containing of nitrogen	.494	
Equal to ammonia	.599	
Insoluble inorganic matter (ash), containing of—		
Soluble silica	.907	4.05
Insoluble silica	.561	
Oxide of iron, alumina, with phosphates	.596	
Containing phosphoric acid (.178)		
Equal to bone earth (.386)		
Lime	1.120	
Magnesia	.143	
Potash	.099	
Soda	.019	
Sulphuric acid	.861	
Carbonic acid and loss	.484	
		100.00

The proportion of ammonia in a free state contained in this sample being .034; in the form of salts .088. In connexion with this analysis of farm-yard manure, it will be extremely interesting and suggestive to glance at some of the facts connected with the exhaustion of the soil of the different fertilizing manures by our various crops; and first let us glance at the proportions of those materials contained in good loam of an average quality. There are —of water 2.47, organic matter 9.11, phosphoric acid 0.27, sulphuric acid 0.14, potash 2.73, soda 1.39, lime 2.27, magnesia 1.05, aluminum 17.09, silica 58.14, chloride 0.54, oxide of iron 4.20. The following crops—*the produce of an imperial acre*—draw from the soil, in proportions as stated, of the above substances:—

WHITE OR GRAIN CROPS.

Kind of Grain.	Total weight in lbs. of produce per acre.	Weight in lbs. of mineral matters.	Potash.	Soda.	Lime.	Magnesia.	Chloride.	Sulphuric acid.	Phosphoric acid.	Silica.	Nitrogen.
Wheat...........	4,256	148.60	30.81	4.04	2.57	7.03	—	3.87	19.38	73.90	45.33
Barley...........	3,105	143.38	30.64	1.44	6.57	5.85	2.42	1.95	22.74	61.77	41.01
Oats.............	3,680	192.42	41.71	6.10	15.60	9.54	5.75	5.18	33.42	75.12	41.64
Beans and peas	3,790	164.48	78.61	18.45	32.38	7.74	7.00	3.83	17.39	4.08	72.98

GREEN, ROOT, AND FORAGE CROPS.

Kind of Grain.	Total weight in lbs. of produce per acre.	Weight in lbs. of mineral matters.	Potash.	Soda.	Lime.	Magnesia.	Chloride.	Sulphuric acid.	Phosphoric acid.	Silica.	Nitrogen.
Purnips..........	30,240	218.75	57.35	44.71	28.60	4.65	10.85	39.02	22.57	6.50	60.48
Totatoes.........	6,720	55.58	28.92	2.85	1.30	2.11	3.21	10.24	5.76	1.29	26.00
Hay.............	5,600	391.31	129.79	4.30	35.46	[illegible]	[illegible]	16.57	21.79	133.67	56.22

From the above it will be seen that the various crops draw from the soil varying amounts of certain constituents: this has given rise to a classification of them, according to the constituents which they chiefly draw. Thus wheat, barley, oats, and rye are called silica plants, the amount of silica drawn from the soil by them being larger than of other important constituents, such as the salts of lime and magnesia, and of potash, and of soda. The pea, bean, and clover crops are again called lime plants, these drawing more of the salts of lime and magnesia from the soil than of silica or of the salts of potash and soda. Turnips, beet, and potatoes are called potash plants, the proportion of salts of potash and soda which they draw being greater than of silica or of the salts of lime and magnesia. The silica plants draw more than 50 per cent. of their ash of silica from the soil, the maximum being (rye) 63·89, the minimum (barley) 55·08. The lime plants draw more than 50 per cent. of lime, the maximum being (peas) 63·74, the minimum (beans) 54·51. The potash plants draw from 70 to 80 per cent. of their ash of potash from the soil, the maximum (beet) being 88·50, the minimum (turnips) 81·60. The crops of a six-course rotation—as turnips, wheat, hay, oats, and potatoes and wheat—draw from the soil per imperial acre the following substances in pounds weight: Potash 319·4, soda 66·6, lime 100·00, magnesia 39·9, chlorine 58·9, sulphuric acid 78·7, phosphoric acid 122·3, silica 364·4, nitrogen 274·0. These figures naturally bring us to the manure and the quantity required of it to restore those constituents withdrawn from it by the crops. "This," as an able authority remarks, "is not so easily decided on, not only from the difficulty there is of estimating the quantity ordinarily applied to the crops, but also from the imperfect knowledge we yet possess of the average composition. The following, however, may be taken as a fair average estimate of the quantities of fertilizing matter in applications of 12, 16, and 20 tons per acre: Potash 201, 268, 335 lbs.; soda 67, 89, 111 lbs.; lime 337, 449, 561 lbs.; magnesia 35, 47, 59 lbs.; chlorine 12, 16, 20 lbs.; sulphuric acid 84, 112, 140 lbs.; phosphoric acid 108, 144, 180 lbs.; silica (soluble) 269, 358, 447 lbs.; nitrogen 165, 220, 275 lbs.

Let us now glance at the value of farmyard manure as shown by analysis and calculation, as compared with its commercial or market value; and here the researches of Professor Tanner will aid us in making the matter clear to our readers. In a ton of fresh manure this authority estimates that there are 55½ lbs. of soluble organic matter, valued at 2s.; of insoluble organic matter 577 lbs., valued at 6s. 9d. Here we observe that the value of the total organic matter, as per analysis, is much greater by at least from 2s. to 3s. per ton than can be and is actually realised in practice—not taking into account the value of the inorganic or ash constituents which come to 4s. 10½d., the total value of soluble matter in a ton of fresh manure being 7s. 11d., of insoluble matter 5s. 8¾d. The difference in price between a ton of fresh and a ton of rotten manure is nearly one shilling, the fresh manure being theoretically the dearest. This valuation, as our readers well know, is precisely the reverse in the practice and opinion of some authorities, who prefer the rotten to the fresh. In a ton of manure there is, according to our authority, no fewer than 1,482½ lbs. of water, which is set down as valueless; so that there is from 13 to 15 cwt. of water, besides some 4 to 5 cwt. of otherwise valueless matter, in a ton, to carried along with it to the place where it is to be used. This large amount of so-called worthless matter, carrying with it only 48 lbs. of absolute fertilizing material, is that which adds to the bulk of farmyard manure, and consequently to the cost of its transport from one place to another. Against this, however, is to be set the advantage that the manure possesses as a mechanical agent in lightening up soils, and attracting air to their particles; for as Professor Tanner remarks, "plants, like animals, need not only food, but room to breathe, and to perform other functions of life; in fact, the one is useless without the other." What we have here given shows how unsafe it is to rely upon the analytical values of manures: so many circumstances come into existence in practice as to modify very materially the indications of theory. There are other considerations which flow out from this remark, some of which will be noticed before we conclude our paper. One circumstance which renders analytical valuations of farmyard manure unsafe in practice is the fact, pregnant with meaning, that chemists are quite divided in opinion as to what part or parts of the manure give to it its value. We have two schools on this matter—that of Liebig, who maintains (and from what we have already given as to his theory of the principles of manuring, is likely to maintain) that the value depends "most undoubtedly upon the amount of the incombustible ash constituents of plants in it, and is determined by these;" the other is that of the celebrated French chemist Boussingault, who maintains that farmyard manure is "more valuable in proportion as the quantity of *nitrogenous* organic matter is greater than the *non-nitrogenous* organic matter." Here, again, as in the case of the general theory of manuring, British practice has decided against the theory of Liebig. Mr. Lawes has furnished the agricultural world with some information on the value of nitrogenous organic matter in manures, distinguished, as is usual in all his statements, by a high practical value. In supposing the case of a 400-acre farm, cultivated on the four-course system, he reckons half of the roots and 100 tons of hay to be consumed on it, and the whole of the straw of the barley and of the wheat—2,500lbs. of the former and 3,000lbs. of the latter—to be kept and used for litter and forage. 43,800lbs. of oats are to be consumed by the horses, and 20 tons of oilcakes by the feeding stock. From all this, 855 tons of fresh dung will be obtained, in which there will be 67.2 lbs. of dry matter, 62 lbs. of manurial matter, 11.1 lbs. of phosphoric acid, reckoned as phosphate of lime, 12 lbs. of potash, 14.8lbs. of nitrogen, and 17.8lbs. of nitrogen calculated in ammonia. But this amount of fertilizing material will have to be very considerably reduced in practice, as so many modifying circumstances come into play, such as the loss arising from decomposition, the increase in the quantity of water, and the decrease of fertilizing materials, arising from the neglectful and wasteful manner in which the farmyard dungheaps are generally managed, or rather mismanaged. Mr. Lawes points out what Wolff made very clear, but what was previously unknown amongst a large class of farmers—that the value of farmyard manure is influenced materially by the quality of the food upon which the animals feed which produce it. Thus, for instance, estimating the value of dung produced by animals fed upon Swedish turnips at 4s. per ton, that produced by them if fed upon linseed oilcake will be as high as £4 12s. Some authorities allow a very high percentage of the food consumed to remain in the manure—as high, in the case of oilcake, as 33 per cent., or one-third. Wolff, the chemist above alluded to, estimated, as the result of his experiments, that when sheep were fed upon rapecake no less an amount than five-sixths of the whole nitrogen of the food was left in the dung; and in the case of cattle, seven-eighths. With reference to this point of farm practice, Mr. Lawes says "that it is quite immaterial to the growth of the crops whether the additional amount of nitrogen be purchased in the form of oilcake, and so supplied to the land in the farmyard manure, or whether it be purchased and applied in the form of artificial manure, provided only that the requisite mineral constituents are supplied in the form of the excrements of animals, or of artificial manures. The question," he says, "is entirely one of economy, depending chiefly on the relative prices of meat and corn and of cattle foods and artificial manures." It is right, however, to point out here the danger which may arise of estimating too highly the percentage of food left in the manure, and by consequence its manurial value. Dr. Anderson, the chemist to the Highland and Agricultural Society, throws out a word or two of seasonable warning on this subject. "I must confess," he says, "I have always been of opinion that there is no way in which a farmer is more likely to deceive himself—the proportion of the food which is thus to be referred to the manure heap being mere guess-work, unsubstantiated by experiment, and generally overrated; as, for instance, when we hear of one-third of the price of oilcake being debited to the manure. It would be much wiser," he continues, "to ascertain the expenses of feeding, irrespective of the manure heap; and then of course, if there is a profit upon it, the manure is got without cost, and nothing but the experience of application is to be estimated. If, on the other hand, there is a loss, that loss is the cost of the production of the manure; and it must be the object of the farmer to see that it does not exceed the price at which the farmyard or artificial manures can be purchased."

From several hints thrown out in the course of this paper, it will have been observed that very much of the value of farmyard manure depends upon the way in which it is treated—that is, saved and applied to the land. In this, as in other departments, there are two ways of doing this—a right way and a wrong one. What is the right way, we have endeavoured to point out and describe in a previous "chip," and to which therefore we refer. What remains therefore of this paper we purpose to devote to a few important considerations connected with the use of artificial manures as supplementary to the farmyard manure, which has always been and still is the mainstay of the farmer. We say supplementary; for no opinion is more erroneous, as none has been more productive of mischief in practice, than that which maintains that by the use of artificial manures farmyard dung can be dispensed with. They are, as Dr. Voelcker points out, "valuable supplements to farmyard manure," enabling the "intelligent agriculturist to make one ton go twice as far as it would, without the simultaneous use of artificial manures." These artificial manures exercise in no degree a mechanical effect, or, if so, only to a very limited extent, which, as we have seen, is one of the valuable properties of farmyard dung. Their chief, if not their only purpose, is a chemical one, yielding directly, and more or less immediately, the food required by the plants, and which is given only to a limited extent and in a way more or less tardy by farmyard dung. A good deal of skill is requisite to use artificial manures with economical effect; for it should be remembered that they owe much of their fertilizing value to the peculiarities of the soil in which they are used, each soil having its own particular capability to take advantage of the manurial constituents in the manure; the peculiarities of the crop, moreover, the climate, and the period of application, all demand the care of the farmer. The condition or state in which the artificial manure used is in should also be attended to, the best condition being a finely pulverized one. The nature of the manure will also have an influence upon the period of its application—those in which the constituents require time to be taken up by the soil, such as wool manure, bone-dust, and the like, being sown at autumn, so as to be as long in the ground as possible; those which are the most easily assimilated or taken up, such as nitrate of soda and the like, being applied pretty late on in the spring, and even in the early summer; while those manures occupying the middle position between the two classes stated—guano and superphosphate—should be applied early in the spring. The facts to which we have already drawn attention, as to the difference which the time of the year has upon the manurial influence of nitrogenous and phosphatic manures should not be overlooked. The period of application of the manure will also be influenced in some instances by the condition of the plants to which it is applied; and as regards the condition of the atmosphere, &c., it should be damp; and if the application should be followed by a gentle rain, so much the better. This holds especially true where top-dressing has been resorted to. Mr. Jacob Wilson, of Morpeth, has done the farmer good service by drawing up an excellent series of remarks and rules for their guidance in the use of artificial manures. A few of the points to which he draws attention—in relation to those noticed above—will here be useful. If grain has been sown in drill, the best time to apply the manure will be just previous to the horse-hoeing, which operation will serve two ends—weeding and effectually mixing the manure with the stirred soil. But if applied at seed time, the manure should be harrowed in at once; for in the case of Peruvian guano a much better effect is obtained by thus managing it, than by afterwards top-dressing the crop. In the case of root crops the manure is best applied at seed-time. If the land has received a winter manuring of dung, the manure may be sown broadcast and harrowed in, and drilled up ready for sowing; but if the land has not received a winter manuring of dung, and if this be applied at seed-time, it may be then sown broadcast on the top of the drills on the farm-yard dung, and the two manures then covered in. Mr. Wilson, while stating that bone-dust and superphosphate may be drilled-in with the machine, is an emphatic advocate for the broadcasting of all nitrogenous and alkaline manures, and well mixing them with the soil, inasmuch as nitrogenous manures exercise a bad influence on the young plant and the delicate seed, and should therefore never be applied near them.

THE STEAM-ENGINE ON THE FARM.

The astonishing progress of steam power, as applied to agriculture, is manifest to every one. It has been adopted and extensively used everywhere. Almost every farmer makes use of the power, and nearly every farmer whose occupation is somewhat large possesses an engine. The speed and excellence of the work done by the aid of steam power are becoming more appreciated daily. In thrashing and dressing corn it has economised labour fully one-half. In steam cultivation it is doing, and will do more if the excellence of work, the economy of time, the order of culture, and rotation of cropping it will permit are taken into account. Its adoption is now general, and the number of engines possessed by farmers throughout the kingdom is amazingly great, and forms no small item of their employed capital. It is to the care and management of these engines that I desire in this paper to call attention, not only to promote their satisfactory working, but also their economy and safety in work — I say safety in work. This has become a very important part of the subject, and one upon which I wish more particularly to speak.

It is well known that the class of engineers, if I may so designate the managers of farm steam-engines, is of the humblest kind—chiefly it will be found to be amongst the more intelligent of the farm-labourers. They have probably been frequently employed with others in "thrashing by steam," and may have so noticed "the man setting down the engine," "filling the boiler," "getting up the steam," "oiling the parts," "turning on the steam," "shutting off the steam," "opening the safety-valve," and so on; for they are very particular about these terms. They may also have noticed how the water is pumped into the boiler, the gauge to ascertain the power employed, and the glass tube to tell the depth of water in the boiler, and the careful way "the man" watches the pace, and strives to keep regularity in "driving." If the labourer has done all this pretty well, he is considered eligible to take the occasional charge, and by-and-by is promoted to the full management of the engine. Now this cannot be a sufficient education for an engineer, for such he really is expected to be, but the majority of our farm engines are managed by such men; and not only thus far, but these men very soon begin to think themselves fully competent to alter, adjust, and repair the various parts of the engine and thrashing-machine, probably calling now and then to their aid the village blacksmith in some special difficulty; and as the general class of farmers know very little more about engines and machinery than their men, and are desirous of saving money in repairs, this order of things everywhere obtains favour. Such a practice is no doubt false economy, in the aggregate. Something is done wrong—something is omitted or neglected or missed in the overhauling the engine and machine; hence an accident; and who can wonder at it? It would not be of great moment if the farmer's property was merely lost by it, but it is often attended with loss of life or limb. We are continually hearing of bursting boilers, destruction of farmsteads, and loss of life from these accidents—if accidents they can be called. Should these not be rather be classed in most cases as mismanagement?

It is quite a common thing in the manufacturing districts to have the engines inspected quarterly by competent men. The manufacturers belong to or are members of some of the many Boiler Insurance Companies, or are insured by them. These Insurance Societies send their agents quarterly to examine every engine insured. They examine them thoroughly; they test all the parts, and give proper directions for management, so that comparative safety is really insured, and great economy in working often results from their instructions. Farmers have none of these salutary visitations to aid them, and much is it to be regretted. I believe the periodical inspection of every farmer's engine would be of considerable use and value to him, if made by a competent engineer—one not only fully versed in all mechanical details, but equally able to give the best instructions and advice as to the best mode of working the various engines he inspects; for I take it that one code of laws will not apply to every engine. The unit of power or pressure must depend upon the condition and strength of the boiler and working parts of the engine, boilers being made of such various strength and thickness of sheet-iron. None ought to be of less than five-sixteenths of an inch in thickness, the stronger the better in accordance with good judgment; if otherwise, the pressure of steam upon every square inch must be regulated accordingly, and the periodical advice of a competent engineer upon this point could not, I repeat, fail to be valuable.

The engines owned by farmers have, for the most part, hitherto been employed exclusively for thrashing purposes: now great numbers are engaged in steam-cultivation; these are generally worked up to unity of high-pressure, frequently exceeding 65lbs. to the square inch. It will often occur that the engine must do its utmost, or some portions of the work in cultivation cannot be effectual: some hard or stiff place must be torn up, and it takes all the power of the engine to do it. This overstraining will at some period show itself, and possibly with fatal results. Now, from all these risks, both in the thrashing and cultivating departments, the public ought, if possible, to be protected; hence Government inspection is required.

Government Inspection.—This is a subject of no little importance, and requires a careful examination. Very few farmers would like their engines to be under the surveillance of Government officers; there is something peculiarly unpleasant and annoying to a sturdy farmer to find a man periodically upon his farm demanding a sight of his steam-engine, but it is not singular in other departments of business. Manufacturers of all kinds are open to Government inspection: brewers, maltsters, and many other trades are open to it. Why should the farmer be altogether exempt, and more particularly if it can be shown that the safety of the public demands it, and it will at the same time tend to his own advantage? Now, this, I think, can readily be done: It cannot be denied that considerable loss of life and great destruction of farm property have occurred, and are continually occurring, from the bursting of farmers' boilers. If these were carefully inspected quarterly or half-yearly by a good practical mechanic, and such repairs and alterations made and management attended to as he might deem it his duty to suggest, much injury and damage might be prevented. He could also, and it should be a part of his duty, examine the engineer or manager as to his competency, and give him such instructions and advice as seemed requisite or desirable. In this way the farmers may be benefited: suggestions for saving coal, oil, extra power in work, the supply of water, the regulation of the steam to the work, the size of coal as applied to the furnace, the general working of the whole machinery, and the various and many valuable hints he might and would give, would be ample compensation for any annoyance from a stranger. Besides this, there are many engines made which are not calculated for heavy work, and some not fit for working. These and all others ought to be placed under inspection, and not to be allowed in use till certificated by the inspector. I was a judge of steam thrashing-machines at one of our great meetings, when the consulting engineer thought it right to and did forbid the working of several portable engines, owing to defects which he considered might prove hazardous to the sight-seeing public. If engines shown for public inspection are so dangerously constructed, what may not be anticipated of those sent in for private use? Depend upon it, the time has come for the appointment of Government inspectors of farmers' engines, for public safety demands this, in consequence of the rapidly increasing number of such engines employed, and public utility demands it, because every one of these skilled inspectors might and ought to act as instructors in all matters connected with steam machinery. Government supervision will tend much to prevent imposition in the manufacture of engines, and also promote a careful management of them by their owners and workmen. The country must be divided into districts: inspectors might be appointed as now in the factory districts; while their reports should be made to the district justices, who could summon all parties who might by neglect endanger the public safety.

HORSE-BREEDING AND SELLING BY FARMERS.

BY A PRACTICAL FARMER.

Nag Horses.—This part of the farmer's business is one of the most difficult and uncertain in which he can embark. There are a few highly-respectable farmers that take up this part of their business as semi-horse-dealers, and who make it answer remarkably well. This class of farmers is constantly on the lookout, either at markets, fairs, or on public highways, no matter where, for horses likely to come up useful animals. These they purchase as they can, and proceed to bring them into a profitable state, according to their age and condition. Young horses are turned out to graze for the summer. The four and "five-year-olds" are well kept, and are practised in riding, or breaking for carriage-work. Much of the farmer's profit depends upon the perfection to which they can be brought in these separate departments. Farmers who are good riders or good drivers, and have much patience, and possess good judgment, often bring out animals of surpassing merit. To teach a horse his paces truly, to give him "mouth," to render him docile, "gentle to ride or drive," is no ordinary achievement; and men who can accomplish this deserve a good profit, and very often get it. It is pleasing as well as arduous work. The farmer is ever at it. He rides over his farm daily. He drives to markets, or wherever he may require to go; and, although the railway is ever so convenient, he must take a horse: they must have practice—they must be in constant riding or driving, or some little defect in paces occur.

Another class of farmers takes higher ground: they will prepare young horses for *hunting*. This is a very uncertain, as generally a very expensive department of business. It requires a peculiar talent, or, more properly, peculiar talents. The man must know a good horse, and how to ride him. He must possess a good seat, unmoved temper, great nerve, and no little courage, to train raw colts for hunting. He must have a thorough knowledge of the management of hunting-horses, both in work and out of work; how to prepare them for the hunting-field, and their treatment after a hard day. He must know the habit and temper of every horse he has to train, and act toward him and manage him accordingly—the feed, the grooming, the exercise, the stable. It is not a little thing to properly manage and train young horses for hunting! Then there is a connexion to seek. The farmer must hunt, or his horses are not sufficiently before his customers. He must be daring, and take a lead to show his horse—a leap extraordinary, to show him as "a jumper." He ought also to be personally acceptable to "the field," by his straightforward manly bearing; and perhaps a little cultivation of etiquette might be serviceable in his business. Depend upon it, no novice can succeed in this department of dealing.

There are a few, and but a very few, farmers, who pay especial attention to breeding *race-horses*. This is a more speculative business than breeding horses for hunting. It may answer pretty well to procure a good entire blood horse, and travel him, or let him stand as a stud-horse; but to breed horses for racing-purposes requires a great knowledge of the turf, and a great expenditure of money in brood mares and covering-fees and management. To make way as a racehorse-breeder the stock must be of first-class blood, and these are very costly; as, should the produce fail to be of use, or become unpopular, they generally turn out to be of little value, owing to want of power as working animals. For the farmer to engage in racing-speculations on his own account is a most dangerous course. If he can breed respectable animals, by all means sell them to "racing men." All gambling should be avoided. Farmers have no valid ground to rest upon in such a course. I should always fear inevitable ruin.

Another class of farmers breed horses especially *for sale*. They graze and use a number of brood mares, select appropriate sires, and bring their produce up for sale as early as appears desirable; but generally they are sold off at four or five years old. In the meantime they are made useful on the farm, as riding or carriage-horses, and occasionally in doing light farm-work; much depending upon the progress and value which the animal indicates as he grows up. No farmer would endanger a valuable animal before a plough or harrow, or in any hazardous employment. There are plenty of mishaps and injuries which accidentally fall to the lot of farmers' young horses, without endangering them recklessly; indeed, it is a very speculative business, at the best. It is immaterial if any of the cattle become blemished, or lose an eye; but a blemished horse is surprisingly depreciated in value, although he may be just as capable of fulfilling every kind of work he is put to as before his accident. The fact is that no gentleman of position would purchase a blemished horse, and it must be an especial favourite if he uses an old servant after being perceptibly injured. The blemished horse, then, becomes at once a second-rate animal, and his destination most probably is for home-use, or for a cab for a tradesman's service, or other ordinary uses. The majority of farmers, however, are not professed breeders of horses; but almost every one occupying a farm of moderate size will keep one or more nag mares or light cart mares, from which he will endeavour to breed a colt or two for sale. He will generally use a blood horse to the cart mares and a good roadster to his nag mares, and the produce is often a good useful carriage or useful riding horse. In this way he may occasionally have a horse or two for sale, which constitutes his yearly dealing, and which he often finds one of the most difficult parts of his business. The usual course is to prepare the horse for the neighbouring fair, or it may be the popular fair of the county or district. If the horse is a first-class animal, well got up, and shows excellent paces, he is readily sold. The manner of exhibition and sale differs from that of other animals. He is taken to the fair several days before the actual fair day, and placed in the best stable that can be obtained. Dealers take their walks around to the different stables, and select for their examination such horses as attract their more especial attention; or they are invited by the owners to look at their horses. It is considered *infra dig.* to take out, and ride a first-class horse in the fair without being desired by a purchaser to do so. It is thought to be detrimental to his sale, and it is quite unnecessary, as every first-class dealer is too ready to buy such a horse. The dealer enters the stable; he selects a horse; he is brought out; he undergoes a careful examination; his eyes, teeth, legs, and feet, are closely scrutinized. This done, he is led along a short distance to try his paces gently: first a walk; then a trot; then he must be ridden in his different paces, including a canter or gallop, and occasionally a leap. The bargain and sale then take place, or he is politely declined. In selling second-class horses the owners are not so scrupulous or nice: they have often anxiously to solicit the attention of customers, and at certain times of the day they are ridden out, and all their paces and qualities are openly exhibited. Dealers and others are attracted by one quality or another, and sales are thus effected. The horses of inferior or ordinary character are often sold with very great difficulty. Unfortunately the bulk, or chief business in horse-dealing, consists of this class of horses. They are horses chiefly in use by the middle-classes of society, and prices vary according to the usefulness and description of horse to be sold. For this class of horses an open fair day is fixed. The fair is held in a field or other convenient place. The horses are either led or are ridden out, and they are for hours ridden up and down the fair, and their paces shown in every way likely to attract the attention of customers. The led horses are generally placed in rows for ready inspection and apart from the ridden ones. It is in these open fairs that much noise and hurly-burly arises, and causes them to be held in low repute. However, much business is frequently done; often very unsatisfactory to the seller, owing to the uncertain value of such kind of horses. The farmer knows to a trifle what he can make of his cattle, sheep, and pigs; but when he has a horse to sell he is bewildered: he knows not what price to ask, or what to take. The animal he so much prized at home is criticised in so many ways in the fair, till at length he begins to think he must have been mistaken, and that he must either yield in price or take him home again. He yields, and makes a sale which he subsequently finds is at his fair value. This is the case with hundreds of our average farmers, and as they have only one day's horse-dealing in the year it is not to be wondered at. Then comes the warranty. He must guarantee his horse to be sound "in wind and limb," and put his signature to that statement. Then he has to find or pay for a halter and rug, and most probably a fee to the dealer's man, and the transaction is completed by the horse being delivered over to the dealer or customer. Thus ends many a farmer's horse-dealing or selling for the year.*

Cart-Horses.—The breeding of cart-horses for sale, or the purchase of cart-colts for grazing and sale, is a more profitable business than the same department connected with nag-horses. There is much less risk, and a quicker return of capital. A good first-class cart-colt or cart-filly will realize from thirty to forty-five pounds at two years old; whilst the inferior or doubtful ones are well adapted for farm work, to which they are put, if they are not likely to make a good price; besides, a slight blemish in a cart-horse is of no great detriment. It is the colts that are chiefly designed for sale. The fillies should be and are generally retained for work and breeding purposes. In this way very many horses are bred. Almost every farmer is a breeder of cart-horses. The smaller farmers make it an important part of their business. They work mares only, as distinguished from horses. They select good entire horses to serve these mares, and the foals are so nursed and cared for that they come up admirably, and are generally sold to the larger farmers, who winter them for grazing purposes. Many small farmers who only keep two or three mares will make, upon the average of years, from twenty-five to forty pounds of their foals at four or five months old. The larger farmers seldom sell their foals, but retain them for sale at two years old, or keep them for further service. It is highly important to breed cart-horses as large in size as possible. A good dray-horse is a very valuable animal. Frequently good dray-horses are sold, at prices varying from sixty to a hundred and forty or fifty pounds. Good draught-horses are valuable, but do not realize the price made by their larger fellows. A noble dray-horse, or rather a grandly beautiful entire horse calculated to get dray-horses, is one of the finest animals in creation. The beauty, symmetry, fire, and activity of the racer, the hunter, or the roadster, often excite our highest admiration; but there is not that majestic colossal, powerful, and beautiful development which as an animal strikes us in the noblest of cart-horses, and as being the perfection of his tribe. His gigantic proportions, his noble appearance, his majestic walk and carriage, his beautiful head and rainbow neck, embellished with the finest flowing mane, command rather than excite our wondering admiration. First-class horses of this kind will frequently realize from one hundred to three or four hundred pounds. First-class mares of this powerful breed likewise make very high prices; and farmers are very reluctant to part with a good brood-mare.

In speaking of cart-horses, I take them as one class of horses, although of several different breeds. Every farmer will be ready to breed a cart-horse, but every farmer would not attempt to breed race-horses, or hunters, or even nags. It would perhaps be invidious to point to any particular breed of cart-horses which may be supposed to possess most merit, or make the most money. The Suffolk horse (not now the old Suffolk Punch) is so greatly improved as to become generally popular, and the proportions they have attained to are scarcely exceeded. They are bred chiefly in the eastern counties. The old English cart-horse, which is bred in considerable numbers in the midland counties, is also much improved, and in size and proportions, perhaps, exceeds all others. The majority of our dray-horses emanate from this breed, and often attain to wonderful proportions. Some of our London brewers' teams are truly interesting exhibitions of themselves, and the loads they will master is surprising. The Clydesdale horse is a capital animal, of great power and beauty, and exceedingly well worth breeding. For activity and farm service he is quite equal to the above breeds, but as yet he has not achieved their improved proportions. The Cleveland horse is a highly useful animal, but he by no means attains the gigantic size and substance of any of the above breeds. For hilly or mountainous districts he would surpass them in general usefulness. The Welsh horse is also a light cart-horse, and smaller than the Cleveland.* He is well adapted for the Principality, or any similar country. He is very hardy, active, and capable of much light work, but not so valuable as any of the other breeds named.

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* Surely it cannot be considered a "general" rule for the farmer to put his cart-mares to a blood horse, and his riding mares to a roadster? If so, there is a deal more to be said on the breeding of "nags."—EDITOR.

These are the principal breeds of cart-horses which are bred in the kingdom; and much depends upon the locality in which the farmer resides as to which kind he will adopt and breed. He has to consider which is best for his own farm-service as well as for breeding purposes. It would be great folly to attempt to breed dray-horses amongst the Welsh mountains. The breeds have already, in reality, their own especial districts, in which it is reasonable to suppose they are most valuable. It would appear to be the best policy to continue thus to breed them, with such especial exceptions as from time to time will arise, or any immediate locality may tempt a deviation. A valley of strong land, in a mountainous district, would be better cultivated by a more powerful breed of horses than the Welsh or Cleveland breeds; and, *vice versâ*, a light-land tract, often found in a strong country, would be more cheaply worked by lighter horses.

I have thus noticed our breeds of cart-horses chiefly to show that the largest and finest animals are far the best worth breeding, and ought to be adopted where practicable.

The sale of a farmer's horses is always an uncertain and somewhat difficult business with him. He makes no trouble of a sample of corn or a stall of cattle; but his horses give him much anxiety. He must put them into the best trim: their looks must be improved and their paces must be perfected before exhibition. Then there is the fear that something may go wrong, and he may lose his sale—an accidental kick, an overreach, a strain. Then there are curbs, spavins, quitters, sand-cracks, to be avoided, or his sale is a bad one. A defect in eye or lung is fatal.

Well, he takes his horse to "the fair." If he is a valuable animal, he is honoured with a stall, and customers are invited to view him at his stable. He is shown out, generally, in a well-littered yard. His paces are tried, and he undergoes a thorough, searching examination. If he proves quite up to the mark, as a first-class horse, well adapted for a London dray, he is soon sold, no matter at what price. There is always a demand for such horses, and a dealer will rarely pass him; but if he turns out to be but a little below the recognised standard, there is considerable difficulty in making a good sale, much depending upon the views of the various dealers who may examine him. The sale of ordinary horses is generally made by an open exhibition in the fair. The farmer takes his stand, with his horses, in some convenient place; and the buyers, in their walks to and fro through the fair, look them over. If any one of them attracts attention, he is brought forward, to undergo such examination and tests as the buyer suggests, while at the same time the process of bargaining is going on. This effected, the horse is returned to his stand, to suit the convenience of the purchaser to receive him. Upon "delivery," the dealer or purchaser takes a warranty of soundness, in some simple form, signed by the farmer; the money is paid, and the dealing, or sale, is completed. This is the common way of farmers dealing and sale of horses, in thousands of instances. If he has only a single horse, he must go through the same course. Farmers do not always give a warranty of soundness. Many prefer taking a less price rather than "have any further trouble." This is unwise, with a sound, good horse. No purchaser can readily give trouble with such a horse; but if any doubt about ultimate soundness is felt, then the course is right; and seller and purchaser may bargain accordingly.

A word or two as to the best time of selling horses. It is the practice with many farmers to breed or buy young horses, work them carefully till they are five or six years old, and then sell them. They assert that they get their farm-work done, and still get a handsome profit upon their horses. If so, this must be good practice; but it must depend much upon careful management, and what is commonly called "good luck." It is a hazardous course with good horses; but with common farm-horses of no great value it may do well. The safest and the most profitable business would appear to be in parting with the young colts at *two* or *three* years old at furthest. They then show pretty well what will be their future development; and the price is realised according to these appearances. A promising young entire colt will often reach a fabulous price, and good cart-geldings are always in demand, at satisfactory prices.

THE HORSE.

Mr. Jacob Smith, of Hamburton, at the quarterly meeting of the Boroughbridge Agricultural Association, read the following paper:—In opening the discussion, I must say that I am sorry the subject has not been placed in abler hands, as I feel that it is a question of great importance. Unless we exert ourselves more than we have done of late, Yorkshire will lose that celebrity for good horses it has hitherto enjoyed, and of which every Yorkshireman is justly proud. Though we have the great difficulty to contend with that our good mares are eagerly sought after to go abroad, still I feel convinced that if farmers would only pay the same attention and judgment to the breeding of horses as is displayed in the breeding of cattle and sheep, Yorkshire would still stand pre-eminent as a horse-breeding county. There is no doubt that for a long time this has required much more care than has been bestowed upon it. Even so long ago as 1831, I find one of our most distinguished veterinarians saying, "There must be something radically wrong in our breeding system. If we proceed to the great marts, we find a remarkable scarcity of anything in the shape of a good nag. It matters not for what purpose he is intended—whether for hunting, carriage, hack, or heavy draught, the difficulty of making a good selection for either of these purposes is the same. There may be thousands in the market, but how few in the eyes of a judge will be even passable for any purpose! Good horses have been becoming scarce in our fairs for the last twenty years, and we find that many of what were considered our most useful sorts have now entirely disappeared. The breed is quite extinct." We might think this was from a writer of the present day, instead of having been written 35 years ago. And how have we been going on since? I am afraid, if the writer of the extract just referred to were to visit one of our fairs now, he would be disgusted, as there are certainly many, as he says, not passable for any purpose; but I am not one to believe that the English horse has so much deteriorated as some suppose. I believe there are far more bad horses bred than there were; but I believe there are some quite as good or better, and, as far as our race-horses are concerned, I should say they are improved. Look at such a stud as Lord Glasgow's, where a gentleman of 14 stones weight could find horses fit to carry him to hounds, and still able to hold their own on a racecourse. But, it may be asked, is the breeding of horses profitable? I should say, decidedly so to a certain extent, provided the farm be at all adapted to that purpose, more especially now when the grazing of cattle is so much more hazardous, and good horses are of so much greater value than they were a few years ago. Indeed, I may say they have nearly doubled their value in the last twenty years. On the card for to-day's lecture, it merely specifies "The Horse." I have great scope given to me; but, as I am aware that the subjects here discussed are intended to be solely agricultural, I shall confine myself to a few remarks on the breeding of such horses as are generally bred by the farmer. I therefore begin with the draught horse, a horse some of us must breed, whether profitable or not. In the breeding of draught horses I would strongly recommend breeding only from large, stout, powerful mares, selecting an entire horse of the same kind, but taking care to have them active also, and for this reason: then you will produce a horse which if you do not like to keep for your own use, you can always sell for a good price to go to work in the towns. I think every farmer ought to contrive to have a young horse or two, according to the size of his farm, coming into work every year, and so be able to dispose of his horses before they grow old. By so doing, if the animals be tolerable hacks, he will be able to keep up his team without any outlay, and often have a nice balance in hand. To those persons who farm light soils, and do not like to work strong horses, I say do not breed draught horses at all, as I feel quite sure you cannot breed light farm horses with profit, this kind of horses being always far cheaper bought than bred. Instead of breeding such horses it would be advisable to breed coach horses. That may be done with advantage; in fact, it is very questionable whether any kind of half-bred horse pays so well for herding as a coach horse. They are ready for sale at an early age, being generally sold at from three to four years old to the London dealers and job-masters, who buy them unbroken, and break them in when they want them. In breeding coach horses, care must be taken, as the coach horse now is of a very different class to what it was before the times of railways. Then were in fashion large lumbering carriages, and there were bad roads and long stages. The Cleveland horse was then in favour. Now, with light carriages and short stages, a good clean-legged half-bred mare is required, with good action, to put to the thorough-bred horse, in order to produce the quick-stepping, blood-looking valuable carriage horse of the present day. But you may say, It is very good talking about the good mares, but how are we to get them? I might reply to many, Do you ever try? I am sure if you did, you might very easily get better brood mares than you have now. On the contrary, the custom with many is to sell the good mares to the foreigner, and perhaps keep one that no one will buy to breed from themselves—penny wise and pound foolish. I am afraid it would take some one far more persuasive than I am to induce some people to keep their best mares, though I am happy to say in many instances there is more inclination to do so than there was. In breeding hunters there is even more difficulty in finding suitable mares than for breeding coach horses, for, with the improvements in agriculture, the fields being made larger, hounds are bred for more speed, and of course hunters have to follow suit, so that now, in order to breed a valuable hunter, you require a mare with two or three crosses of blood. This, combined with strength, is difficult to meet with, therefore it makes the breeding of hunters much more hazardous. But whatever kind of horse you wish to breed, there are a few points that should not be lost sight of, viz., good action, good legs, feet, and freedom from all natural unsoundness, for, without these, however good-looking the horse may be, he is comparatively worthless. Before putting a mare to the horse, every man should first ask himself what kind of a horse can I reasonably expect to breed from such parents. If, on consideration, you cannot justly look for a good animal of any class, say either draught horse, harness horse, or hunter, by all means give up the idea, or it can only end in disappointment and loss. How often do you see a man that has just a moderate half-bred mare put her to a mongrel bred horse, whose sole recommendation is perhaps that he comes to the place and his fee is small (and I am sorry to say there are such horses kept for stallions)! What can he expect to breed but something of little use to himself, and of little value to sell? whereas, had he put the same mare to a good thorough-bred horse, he would not have bred a worse, and in all probability a much better animal. Since, then, it is evident that we now require a thorough-bred horse in order to produce hunters and carriage horses, and I might also say really good hacks, the selection of a blood stallion is of great importance, and this is not so much under the control of the farmer as in the case of mares, as he is really obliged to select his stallion from such as are in his immediate locality. Can this Society, or the members of it, do anything to ensure for the district such a desirable accommodation? for though, through the enterprise of some individuals, to whom our thanks are due, we perhaps have been as well accommodated, or better than other parts of the country, still we have no guarantee for the future; and, besides this, the present system has a great disadvantage, and this is, that as the risk and expense of travelling a horse through a large district are very great, he is obliged to serve a great number of mares in order to make it profitable. The consequence is, there are generally many barren mares, a source of great annoyance to the breeder; and who can wonder, when for a horse to make a successful season he ought to have not less than his 100 mares, and in many cases they ought to have far more? Only this week I asked the owner of a stallion what kind of a season he had made? He replied, very good: his horse had served 180 mares! Now, when our fashionable racing stallions are restricted to thirty or forty mares, it is only surprising there are not more barren mares than there are. This evil might be checked by charging a larger fee; but I don't think this has been found to work well in a country district. Can, then, a few members and friends join together and purchase a couple of horses—a thorough-bred and draught stallion—and keep them in a central place, and also entrust them to a certain number of mares? This has been thought of by some of us before, but was not carried out. I am aware there are difficulties in the way, yet none which I think might not be easily overcome. I introduce the subject here because I think it is a favourable opportunity of hearing the opinions of many parties interested. I have said nothing as to the rearing, management, and breaking of young horses, as to go fully into the subject would, I am afraid, take up too much of your time. I would only advise every one to keep their young horses well, more particularly their foals, as by so doing they certainly save a year, and if they won't pay for good keeping, I am quite satisfied they will not for hungering. In conclusion, I beg of you all who breed horses to breed only from the best animals you can get, remembering that you must expect "like to produce like," and that a good horse costs no more keeping than a moderate one, and, when ready for sale, is worth three times the money.

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* The Cleveland is a carriage not a cart-horse.—Editor.

Mr. GAUNT said that he had been at Malton the other day, with the intention of procuring a thorough-bred horse, but he had not succeeded in obtaining the description of animal which he wanted. He was determined to look out for a short-legged thorough-bred horse, too slow for racing purposes, and when he had obtained an animal of this class he should not keep him as an entire horse to travel about the country, but have him for the use of the farmers around, and they could send their mares to him and be charged a reasonable price. The Cleveland carriage mare was not exactly the kind of animal for breeding carriage horses, unless by putting it to the entire thorough-bred horse of the kind he had been speaking; and he was of opinion that by using a horse and mare of these kinds they would succeed in procuring the exact sort of animal they wished as a carriage horse for the present day. A thorough-bred horse was the best to breed from for the hackney class, as that class generally required improving in breed. They were inferior animals and short of blood, and when ridden twenty miles on the road, or less than that distance, they were quite exhausted.

Mr. APPLEYARD agreed with the sentiments generally expressed by Mr. Smith in his paper, and also with the remarks made by Mr. Gaunt, but he should like to know how the breeding of the horses spoken of by Mr. Gaunt could be made to pay. Unless the farmer had a good brood mare it was a risky business indeed to breed horses at all. For his own part, rather than breed horses he would scour the country round, and purchase the animals which he required, for that was a less hazardous course than breeding horses. He was doubtful whether breeding from thorough-bred horses would pay the farmer, but in making this remark he did not wish to discourage breeding horses upon this system, which might be made to pay if persevered in for years.

Mr. SCOTT said he was glad that there was a growing disposition becoming manifested of having better breeding mares than there was a few years ago. The Cleveland mares of the pure breed were almost extinct, and he thought it would be well if they could restore that fine breed of mares, for then some first-class animals might be produced.

Mr. GAUNT said it was important to have a good mare, because it was impossible to obtain a good foal from a bad animal.

MILLS AND MILLING.

The manufacture of flour is doubtless coëval with that of bread, and both may be said to be as old as the race of Adam. According to Horne Took, "the word bread is derived from brayed grain, or from the verb *to bray* or pound in a mortar, the ancient method of making flour." The Israelites in the wilderness used both mills and mortars, as will be seen from the following passages of sacred writ: "And the people went about and gathered it (manna), and ground it in mills, or beat in a mortar, and baked it in pans and made cakes of it" (Numb. xi. 8). And in the Mosaic Code, relative to pledges, the construction of the mill and its use at that period are thus indicated: "No man shall take the nether or upper millstone to pledge, for he taketh a man's life to pledge" (Deut. xxiv. 6), every family having a mill, and being dependent upon it for their daily bread, as subsequently noticed. The Egyptian mill is thus mentioned in the Bible: "And Moses said, Thus saith the Lord: About midnight will I go out into the midst of Egypt; and all the first-born in the land of Egypt shall die, from the first-born of Pharaoh that sitteth upon his throne, even unto the first-born of the maid-servant that is behind the mill" (Exod. xi. 4 and 5).

Wilkinson thus describes the mills of the Egyptians (Vol. II. p. 118): "Their mills were of simple and rude construction. They consisted of two circular stones, nearly flat; the lower one fixed, while the other turned on a pivot or shaft, rising from the centre of that beneath it; and the grain, descending through an aperture in the upper stone immediately above the pivot, gradually underwent the process of grinding as it passed between. It was turned by a woman, seated, and holding a handle fixed perpendicularly near the edge. And the hand-mill adopted by the modern Egyptian peasants is probably borrowed from and similar to that of their predecessors."

The hand-mill of the Hebrews was similar to that of the Egyptians, as above described by Wilkinson, and to those now in use in the East, as described by travellers. The millstones were from eighteen to twenty-four inches in diameter, the upper surface of the bedstone being slightly convex—the under surface of the runner concave. The former was termed the "nether millstone," and the latter the "chariot." Amongst the Arabs the latter is termed the "rider." The nether millstone was fixed to a pedestal in the floor of the department of the house or tent used for storing corn and for grinding purposes, and sufficiently elevated to permit of the women sitting while at work, and applying their power to the best advantage. Family mills were worked by one woman, or by two women, seated opposite each other, the mill being thus between them. But for public works, as for the army or workmen engaged at any public undertaking, the grinding was often performed by men-slaves and captives. Thus the Philistines, after they had taken and shaven Samson, put out his eyes, and bound him in fetters of brass, set him to grind at the mill in the prison-house (Judges xvi. 21). Also, "They took the young men to grind" (Lam. v. 13). Around the nether millstone a cloth was spread outwards, for receiving the flour. Sometimes, however, a cloth was spread flat upon the ground, upon which the mill was placed. But this was a mark of degradation, more especially to women (see Isaiah xlvii. 1-3), as the princesses of Chaldea, whose mills were mostly worked by captives.

At a very early period the Chaldeans, Egyptians, Hebrews, and other nations of the East used large mills, worked by asses and oxen, and later, by water. They were constructed on the same principle as the hand-mills, the chief difference being the large dimensions of the millstones, and the travelling of the draught cattle, yoked to a transverse bar fixed in the upper millstone, round and round the mill. The "millstone about the neck" (Matt. xviii. 6) is generally supposed to mean the large kind thus worked by cattle.

Of the construction of the mortar and pestle of the Chaldeans, Egyytians, and Hebrews, and of its peculiar use, the authorities, sacred and profane, are comparatively silent. Some assume that it was a prior invention to the mill, and most probably so it was. At the same time, it must be confessed that this hypothesis is based upon the erroneous conclusion that Adam and Noah were ignorant men as to physical science, whereas the contrary was the case; for the useful arts were evidently in a higher state of perfection before the Noahitic Deluge than is generally imagined. In 1840, the writer found in the Highlands of Scotland the quern and mortar in use, the former being used in grinding corn into meal—the latter in decorticating barley. And he avers it would not be difficult to prove that the Celtic clan brought both from the cradle of the human race in Central Asia to the Highland glens of the North. And speaking from memory, it occurs to him that he has read of the mortar and pestle being in use at the present day in the East, as in Inverness-shire, in decorticating barley and other grain. Such being the facts of the case, the more likely conclusion is that the Hebrews used both the mill and the mortar, but for somewhat different purposes—just as we use grinding mills and crushing mills for different purposes. Indeed, we do not see the possibility of their getting on with the various operations of domestic economy without both the mill and the mortar; for many articles could be pounded in the latter that could not be successfully ground in the former.

Amongst the Hebrews, the use of the hand-mill was a daily domestic affair. Considerable art was displayed in the setting and driving of the upper stone successfully, so as to make flour of the best quality; and no Jewess of the first rank was ashamed to learn this art, but the contrary. Job's wife had evidently learned the art, or he would not have said, "If I have laid wait at my neighbour's door, then let my wife grind unto another" (Job xxxi. 10). If a wife had maid-servants, they did the work of grinding; but if not, she had to do the work herself, until her daughters grew up to relieve her.

The work was generally performed the first thing in the morning, the grinding and baking being, for the most part, a daily concern. Under article μυλος, Parkhurst says: "Observe that in the East they usually grind their corn at break of day, and that when one goes out in a morning one hears everywhere the noise of the mill" ("Harmer's Observations," vol. I., p. 250, &c.) The women fed in the wheat with the one hand, and drove or turned the mill with the other, and frequently accompanied their task with a song; and the loud and rapid motion of the millstones in grinding was taken as indicative of a high state of domestic and national prosperity, and its contrary that of adversity. There are several beautiful allusions to this in the sacred writings, as in Jeremiah xxv. 10; Eccles. xii. 4, &c.

The newly-ground flour was put through sieves or bolting cloths, to remove the bran; and the wheat, before it was put into the mill, was also sifted, to remove dust and impurities. Allusion is made to this in Isai. xxx. 28 and Amos ix. 9.

When one woman only worked the mill, the mode of manipulation is manifest, as the handle would be turned round with one hand, and the grain fed into the eye of the chariot or runner with the other. But when two women are seated at the mill, opinion is somewhat divided as to how they actuated the handle and fed-in the grain. The writer of the article "Mill" in Dr. Kitto's *Encyclopædia of the Bible* says the two women work to each other, each turning the handle at her own side of the stones, half-way round. The writer of the article "Mill" in Dr. Smith's *Encyclopædia of the Bible* objects to this plan as reciprocating and unequal, thus jolting and making bad work, and affirms that the action of the two women upon the handle was continuous throughout the rotation. In other words, there were always two hands continuously actuating the handle; and we may add both these plans have a numerous advocacy.

Practically speaking, the probability is that both plans were in use amongst the Hebrews, but that neither was the *modus operandi* generally pursued. In all such operation Experience is the master teacher, and this rule doubtless applies to the case under consideration. Now the *modus operandi* in actuating the Hebrew mill is that of a horizontal coffee-mill, and many other familiar examples now in daily use, in all of which the operator learns to apply his strength or her strength to the best mechanical advantage, and to change hands so as to relieve the muscular power of the arms alternately. And we may add, this is done whether the winch-handle or crank is worked vertically or horizontally. Such being the facts of the case, it is manifest that amongst the Hebrew maidens at the mill there must have been the same infinite variety of manipulation as we see exemplified at the present day; while the muscular power of the arm, supposing the two women at the mill to have been right-handed, as probably the majority of them were (the tribe of Benjamin, perhaps, excepted), would have been in pulling the handle to them, the central action of the unner upon its pivot carrying the handle past them; and the econd greatest effort would have been in pushing the handle rom them; so that, calling the former the first power and the atter the second power, the two would always be applied conanctly together—*i. e.*, the first power of the one woman and he second power of the other, or when the one pulled the ther would push the handle. But whichever plan was the ne generally adopted, it is manifest that the operators would ccasionally change hands during a morning's milling; for, ranting that the work was not heavy, it was nevertheless monoonous and fatiguing to the muscles.

The ancient Greeks borrowed most of their domestic achines and practices from the Egyptians, and this is what hey did in mills and milling. Thus Homer, in giving an ccount of how Alcinous employed his fifty maid-servants, alost proves this literally, when he says in his Odyssy, VII., ne 104:

> "Some at the mill grind the well-favoured grain."

The Romans followed the Greeks, but were perhaps more ow for a long period in copying the more refined improveents in the arts. Latterly, however, they made up for their rly rudeness, more especially in agriculture and the useful ts. Vitruvius, an eminent engineer in the time of Augustus, ves a description of water-mills then in use, constructed on e principle of the older mills worked by cattle and by hand, e only difference being in the application of the motive-wer. This latter, the famous poet Antipater celebrates in e following descriptive and oft-quoted epigram, which we ke from Brewster's Encyclopædia, viz., "Cease your work, ye aidens, ye who laboured in the mill: sleep now, and let the rds sing to the ruddy morning, for Ceres has commanded the ater-nymphs to perform your task. These, obedient to her ll, throw themselves on the wheel, force round the axle-tree, d by these means the heavy mill." At a later date Paldius, an agricultural writer, also mentions the use of water-ills amongst the ancient Romans, who carried them into ritain, where they have remained in operation ever since, ith very little improvement up to the commencement of the st century.

During the middle ages it would be interesting to follow up e consecutive steps of the history of mills and milling, did r limits permit. Throughout that long period poets and inters have never failed to do justice to the miller and his ll, the touching scene having something of special iginality about it; as if the flowing stream, the plashing wheel, the movements of the miller, and so forth, were all the genuine productions of Nature's own happiest hand. When the great barons began to beat their swords into plough-shares and their spears into pruning-hooks, things took a turn, giving a more formal square-and-compass aspect to the consequential appearance of manorial-grist-mills. Millers then presumed to think *de novo*; manufacturing towns grew up like mushrooms on a dunghill, and opposition mills to grind in almost every populous district; so that by the commencement of the present century there was no end of plans in operation, and schemes innumerable in embryo.

There is, however, a remarkable sameness of mechanism and purpose in the description of mills and milling to be found in old agricultural and mechanical works, encyclopædias, &c., published about the commencement of the present century, as if perfection had by this time been attained, beyond which the last editions of the Encyclopædia Britannica and of Loudon's Encyclopædia of Agriculture do not venture to say a word. There is something very striking in this to the young student in search of the footsteps of progress at this time; for unquestionably very important advances were made in the march of improvement during the last century and first quarter of the present, or between A.D. 1700 and 1825, there being many individual exceptions of go-ahead millers, engineers, and millwrights, to the general rule of the old manorial grist-mill school. At that time France and Holland were considerably in advance of Britain, more especially in this peculiar branch of mechanics, and, in accordance with the ancient rule of travelling to acquire a knowledge of the arts and sciences, our enterprising practical men visited the Continent, and brought home with them as much as they could carry. It was from Holland, for example, that Meikle, the inventor of the thrashing machine, brought the winnowing machine or fanners to Scotland, and when it was first started in the mill-house, the winnowing being previously performed out-doors by the wind on the sheeling-hill, the servants of those who were getting their corn ground on the new plan took to their heels in terror, believing the artificial wind to be the production of the devil. Since then they have become reconciled to the new order of things.

A mechanical description of these old mills would be superfluous, as our readers must be familiar with them. The "Farmers' Dictionary," a work in two large quarto volumes, publised A. D. 1807, gives drawings, with letter-press description of two hand-mills, a wind flour mill, as used in Portugal; a mill for pot or pearl barley; a mill for oat, barley, and pea meal; a sheeling-mill, and a flour-mill, &c. One of these hand-mills may be said to be the first step in advance of the Hebrew hand-mill. In the latter the runner turns upon a pivot by means of a handle in the stone; but in the former it turns with the spindle by means of a crank-handle, being supported by a "rynd," and upon the top of this spindle is a horizontal fly-wheel, or three arms loaded at their extremities, the mill in both cases being worked by one hand and fed with the other. Its inventor says: "It requires some degree of millership in its management and adjustments, but what any servant in a family may easily learn; in which respect it exactly resembles the ancient mills of the East, as already stated. The other hand-mill is similar in principle, having a horizontal fly-wheel on the top of the vertical spindle, actuated by one or two handles; but in this case the stones work in a tub, are fed by a hopper, in the centre of which is the spindle, upon which is a feeder for regulating the supply of grain to the stones, and which, is worked up and down by a thumb-screw. Under the stones is a drawer, with three sieves of different degrees of fineness, for fine flour, pollard, and bran. It will thus be seen that the second handmill is a great improvement upon the first, and involves some important principles of mechanism, to which we shall have to call attention in subsequent papers. In the other mills driven by wind and water there is little in the mechanism to which special attention requires to be turned. A vast amount of experimental philosophy on mills was taught in class-rooms and laid before the public in elementary works on mechanics and natural philosophy, about this time; and in these mills the elementary principles thus taught appear to be reduced to practice. And this applies to the illustrated description of mills to be found in other works, already referred to and consulted.

The experimental philosophy of the last century and of the early part of the present one, relative to the motive power and performance of mills, requires a more extended notice than what we were able to give it in the concluding paragraph of the preceding article. The experiments to which we refer are those of Smeaton, Lambert, Ferguson, Coulomb, Dalton, and others, which will be found in most handbooks on mechanics and engineering, and also in the numerous works that have been published on mills and mill-work, &c. Those of our readers who have learned professionally or otherwise, or have paid attention to the experimental inquiry at issue, and who have perhaps tested the truthfulness of those experiments themselves, must be aware that they were not confined to the motive power, only as of water, wind, steam, and animals, but also to the effect produced in grinding, under different mechanical conditions; that very many experiments were performed which have not been reported; and that not a few of the non-reported experiments are at the present day of perhaps more value than many of the reported ones, owing to new discoveries and their application, although at the time they were performed they were considered comparative failures, or in some way wanting merit to warrant their admission as establishing reliable data, in works of science and in class-rooms.

When we ourselves were at college, the railway locomotive, for example, was ranked amongst the useless machines of that day, along with many others which have since been matured and successfully reduced to practice. Indeed, in every branch of art, milling not excepted, numbers of half-matured projects and mechanisms have been thrown aside for a time, but which have afterwards made their appearance, some of them, under new names, passing current for novelties of no ordinary value.

We shall find in the subsequent investigation of our subject many such examples in mills and milling—old mechanisms in successful operation many times discovered and patented as modern novelties of vast importance.

Up to the close of 1865, about four hundred and forty-eight patents were applied for, in this country, in connexion with mills and milling; while a still greater number of foreign patents have been published.

To give anything like a description of all the projects, home and foreign, thus laid before the public, is far beyond our reach. To classify them is even more than we shall attempt. We may, however, presume to give, under the following two dozen heads, which may be taken as a condensed synopsis of patented claims, a general review of the march of progress—viz.:

1. Bedstone: form, position, fixing, and function.
2. Runner: form, function, position, balancing, and driving.
3. Artificial stones and materials for grinding-surfaces.
4. Runner, grinding on both surfaces.
5. Cooling bedstone by current of water.
6. Covering eye of runner.
7. Covering eye of bedstone.
8. Dressing-stones, steel plates, &c.
9. Progressive grinding, including sheeling.
10. Methods and mechanisms for feeding.
11. Mixing air and grain in feeding.
12. Aërating stones and grinding-surfaces.
13. Screw blast and exhaust-fans on the spindle.
14. Blast and exhaust-vanes and horns on the runner.
15. Detached blast and exhaust-fans.
16. Removal of flour from stones.
17. Removal of air and steam from stones and flour.
18. Filtering air from flour, stive, &c.
19. Flour, stive, pollard, and bran-rooms.
20. Ventilation of mill artificially.
21. Dry-dressing and cleaning of grain for grinding.
22. Washing and drying of grain for grinding.
23. Moistening grain for grinding.
24. Dressing and cooling flour.

As mills were in use long before patents were granted, and as many important improvements were made in these, which were not patented by their inventors, let us examine how far the above twenty-four heads are included, in principle and special mechanism, in the old mills, in order to ascertain what is public property in principle from what can be claimed in principle under modern patents.

The reader who has ever had anything to do with rival patentees or rival inventors not patentees, whether millers, millwrights, or engineers, in a controversy as to the progress of discovery, will readily perceive the propriety of the above course of investigation, as it will enable us to set the claims of such rival parties in their true position and light before the public, more especially before millers and those interested in the milling trade—readers who will be able practically to appreciate the force of our remarks. The milling trade will also perceive that this course is necessary, in order to expose some of the above erroneous modes of expression, such as "closing the eye of the runner" or "bedstone," when the contrary is the fact, and so forth. And last, not least, it will enable us to investigate our subject and expose erroneous views, without making any invidious or other pain-causing remarks by dragging inventors and their shortcomings personally before the public, the number and date of the patent being all that require to be mentioned, and not much of this.

In the hand-mills of the Chaldeans, Egyptians, Hebrews, Greeks, and Romans, the nether-millstone was invariably a fixture, the upper stone only being turned round upon a short pivot in the centre of the former. Hence it has been termed with us the bedstone. But now that we have mill-stones working vertically, and grinding between vertical surfaces mill-stones working vertically, and grinding on the outer and inner surface of two cylinders—mill-stones working horizontally, the lower stone being the runner, while others grind between two bed-stones—the appellation of "bed-stone" to the lower stone, when the runner, has become improper, the bed-stone being evidently the fixed stone, whatever may be its position.

1. The form of the grinding surface of the fixed mill-stone or bed-stone in this country is usually considered to be that of the frustrum of a cone, so that a rule or "straight-edge" radiating from the eye to the circumference, as along the "mainlands," touches the surface close from the inner to the outer edge, as if the grinding surface was thus generated by an augular line from the axis or spindle of the mill. If the lower stone is the bed-stone, then the grinding surface is the exterior surface of the frustrum; but if it is the upper stone, then it is the interior surface of the frustrum. The height of the cone varies from one to two or more inches, and is somewhat less than the height of the cone formed by that of the runner, supposing the lower stone to be the bed-stone, and *vice versâ* when the upper stone is the bed-stone. And when the runner grinds upon both the under and upper surface then there are two bed-stones, whose grinding surfaces, form two frustrums of two cones of different altitudes, the lower one being the lesser, and the upper one the greater, while the latter is interior and the former the exterior surface of the frustrum.

There are, however, in practice many departures from this conical rule, the surface line from the eye to the circumference of the stone having less or more curvature. Indeed, in many old works the grinding surfaces of mill-stones are represented as being zones of different spheres, so that the surface line along any of the "mainlands" or edge of the "master furrows" would be the segment of a circle. The writer of the article "Mechanics" in Partington's "Encyclopædia of Arts and Science" says that in Tuscany the surface of the bed-stone forms the zone of a sphere, while that of the runner forms the frustrum of a cone, so that the line generating the latter would form a tangent to the segment of the circle generating the former. But to us this appears more theoretically learned than practically correct, for tangents only touch circles at certain points, whereas the grinding surfaces of Tuscan mill-stones, we aver, lie closer to each other, at a short distance from, and towards the periphery, than accords with the above rule. Under "stone dressing" we learn from the same authority, that the Tuscans pretend to cut the teeth or furrowing in the form of "the hyperbolic spiral," and most probably the grinding surface of the bed-stone forms the frustrum of a hyperbolic conoid, which would permit of considerable grinding surface, the runner being the frustrum of a cone. And in this country we aver that the curvature of the lower stone, supposing it the bed-stone, as it generally is, or rather was at the period to which our text belongs, is either that of the frustrum of a hyperbolic conoid, or parabolic conoid, and not that of the zone of a sphere or ellipse. How far our hypothesis is correct we shall not say. We have long taken an interest in applied mathematical questions of this kind involved, and shall only further add, that we arrived at the above conclusions from the examination of very successful working millstones, when they were being dressed. We have met with several millers, too, who practically appreciated the importance of the question at issue, some arguing the curve of a parabola, others that of an hyperbola, and so forth; but although we have canvassed it in all its bearings—as the surface of the bed-stone, one species of curve, as an hyperbolic conoid—and that of the runner another, a parabolic conoid, and so on—yet we never took any mathematical steps to determine what the different forms of the grinding surfaces really were. Under the eighth head—dressing stones—we shall offer a few more remarks on this head. Moreover, in some old works the surface of the bed-stone is represented as a plane, that of the runner either slightly curved or the frustrum of a flat cone.

When the runner is a cylinder grinding with its periphery, there are, or have been, three forms of bed-stones in use. Calmet, in his "Dictionary of the Bible," under "Fragments," gives three methods of making meal or flour and three drawings of mill stones—the hand-mill and mortar already noticed forming two of these, and the third a cylinder, or sort of rolling-pin, working upon a curved bed-stone or table, the curve having a close mblance, judging from the drawing, to that of a cycloid, erated by a point in the periphery of the cylinder or rolling-. But this latter, however, does not appear to be a true inder, being of less diameter at the two ends than in the dle, like a beer-barrel or cucumber-glass, while the bed- e has probably a corresponding transverse curvature, al- gh this is not clearly shown in the drawing. The pro- of making flour with this latter mill, therefore, would be of the old plan of a pestle and mortar used by the ws in the wilderness, and still in use in the East gst the Arabs, or bruising and grinding, according to the er the roller is worked. Thus, if merely rolled over, it d bruise; but if partly forced forward, it would both e and grind. The second kind of bed-stone is a plain ce, under the periphery of a cylinder, as the "chace" in a r-mill, crushing-mill, &c. Mills of this kind have a crush- grinding action, and they have for a long time been d in the manufacture of various kinds of meal and flour. third kind of bed-stone is when the cylinder works like a dstone, the bed-stone forming a segment of a larger circle, se centre is somewhat higher than the centre of the runner, to allow the grain to enter freely between the two grind- surfaces, and to be ground finer before it leaves them. time immemorial, stone and steel mills of this kind have partially in use in making pot-barley and in grinding r, so that there is nothing new in the principle upon which y are constructed.

The position of the bed-stone is about as diversified as its n. In all the early stone examples of the Chaldeans, ptians, Hebrews, Greeks, and Romans, as also of our own estors, it lay horizontally under the runner. But when steel mills came into use its position was reversed, rotary motion being more easily given to the lower grinding surface. In the French military mills used by Napoleon I. in his wars its position was vertical, the grinding being chiefly performed below the spindle, on a segment of the surface of the bed-stone, by the whole surface of the runner, segment after segment in succession as it revolved. In grinding, chiefly Indian corn, vertical stone-mills have likewise been used both on the Continent and in America; but to this method of grinding there are many objections in practice which have prevented it from being generally adopted, the horizontal plan being preferred, in which the spindle works vertically, carrying the runner immediately under the bed-stone or plate, as the case may be. In many examples, however, the bed-stone is under the runner, and sometimes both under and above it. We must therefore go back to the last and previous century for the changes which have thus taken place in the position of the bed-stone.

Whatever may be the form and position of the bed-stone, it is usually made a fixture, and not a little has been said about the propriety and even necessity of having it fixed rigidly secure and immovable, so as to present an unyielding opposing surface to the grain between it and the runner, in order to work well. There are, however, exceptions to all general rules, it is said; and accordingly, in fixing, we have met with several highly talented millers, who raised and lowered their bedstones by means of screws or wedges in addition to the usual mechanism for raising and lowering the runner, to regulate the distance between the mill-stones, and the fineness or coarseness of the flour and meal, and who object to raising and lowering the latter only, as insufficient to meet all the demands of practice. When at work, bed-stones thus fixed were as rigidly immovable as if they had been "bedded in alabaster" on solid marble rock, so that the raising and lowering of them was a simple professional question in the work of milling.

The function of the bed-stone, although to appearance of a passive character, is nevertheless auxiliary to that of the runner, both being engaged in the process of grinding. The action of the edge of the "wads," or the furrows of the two opposing stones, have been compared to that of scissors, clipping as they pass each other, and the comparison furnishes a very good practical idea of the respective functions of the two grinding surfaces. It has, however, more to do than merely clip, tear into pieces, and grind; for the flour thus reduced has to be kept cool during the process of grinding, and to be removed as fast as ground; and in both these the bed-stone ought obviously to co-operate with the runner in its centrifugal and fanning action, as we shall show under another head of our subject; hence the various practical questions that have been raised as to whether its surface should be a plane, the zone of a sphere, or ellipse, the frustrum of a cone, of a parabolic conoid, or hyperbolic conoid; and whether its position should be above or below the runner.

ECONOMIC SCIENCE AND STATISTICS.

At the meeting of the British Association Mr. James E. horold Rogers, M.A., President of the Section, delivered e opening address, which comprised an exposition of e issues involved in the question of the coal supply, e recent monetary crisis, and statistical inquiry as affect- g agriculture, electoral returns, and the prices of labour and d. He said: Among the various questions of great econo- ical importance which have been before the public during the st year, there are two on which, with your permission, I will ake a few brief comments. These are the contingency, at a remote date, of a considerable exhaustion of certain mine- l resources in this country, and the altered position which gland might consequently assume; and the present condition f what is familiarly called the money-market. The first of hese questions raises a variety of issues, the magnitude of hich cannot be over-estimated; the second is a crisis unpa- lleled for its severity and its duration. It cannot, of course, e denied that a limited quantity of any natural product, the mand for which is incessant, must ultimately be exhausted. ut the real question, it seems, is, when will the scarcity price perate on consumption? and when it does so operate, in what will the saving be effected? That the scarcity price is not yet operative is manifest from the increase in the aggregate consumption of coal, and from the increased production of metals; for it is in the smelting of metals that the largest consumption occurs. Nor can it be doubted that when the saving becomes necessary from enhanced price the economy will be exercised in this direction. But the total value of all metals produced in this country in the year 1864 (the largest in value, though not the largest in amount, yet recorded) was worth little more than £16,000,000, a great but not a dominant quantity in the annual aggregate of British industry. It would seem, then, that the alarm, if it be not premature, is certainly excessive; that there will be abundant warnings of future scarcity, and necessary economies in dealing with the residue, long before that residue verges to exhaustion. The material wealth of this country, it may be observed, greatly as it is related to its manufactures, one of the raw materials of which is locally limited, is far more fully derived from its geographical position, and thereupon its trade, the advantages and aids of which are permanent. Occupying, as Great Britain does, the most central position between the New and the Old World, it is and will be, so long as its people are industrious and resolute, the highway and mart of nations. Its commerce, by virtue of causes which cannot be reft from it, increases at a far more rapid rate than its manufactures; and if that commerce remain unfettered and unshackled, there seems no limit to the width which its markets may attain. It would not become me, in an introductory address, to enter on the vexed question of the currency, and in particular to criticize the Act of 1844. Opinions are, as is well known, broadly and sharply divided on that famous measure. With some thinkers this system is lauded as one of consummate wisdom; with others it is censured as one of needless and mischievous interference with that part of the machinery of trade which would be self-adjusting without it, and which is not really supported by it. As a rule, indeed, when one set of persons, confessedly competent to form a judgment, decide that a law dealing with commerce is wise and useful, and another set of persons equally competent declare that it is foolish and mischievous, it will generally be found, in course of time, that the latter are in the right. Such was the case with the Colonial System, with the Corn Laws, with the Navigation Laws, with the Sinking Fund, with the laws regulating or prohibiting the exportation of coin, with bounties, with export duties, with the favoured-nation clause in commercial treaties. It has been stated—but not, I think, proved—that the cause of the present crisis has been excessive or over-trading. As far, however, as can yet be discovered, it seems to be due far more to imprudent action on the part of certain banks, who have made advances at long dates, or on securities not readily convertible. The distrust which has followed on the failure of some among these banks had led to the absorption of a large amount of note-currency by the solvent banks, with a view to making their position impregnable. But this retention of notes, as it has limited the amount of accommodation, has indirectly raised the rate of discount; and thus it follows that as long as the rate is high, the notes are hoarded; and as long as the notes are hoarded, the rate will be high. It is worth the attention of the section to consider whether the contingency of such a dead-lock as the present may not, concurrently with the restrictions of the Act of 1844, or independently of them, be rendered more frequently imminent by the increased inducements in the shape of high rates of interest offered to the public on deposit accounts. At all events, the present state of affairs is without parallel. Once, in 1857, the rate of discount touched 9 per cent., just before the relaxation of the Act. It has stood on the present occasion for some weeks at 10; and unless British commerce is now conducted under far more favourable circumstances than it could have been nine years ago, the effect must ultimately be ruinous to the trader—must speedily be followed by a great rise in general prices, and, in all probability, by a glut of capital at no distant date. The value of agricultural statistics does not lie simply in the aid which they may afford in indicating the probable course of the market, and in saving it from needless fluctuations, but in suggesting what is the probable annual deficiency in supply. Many years have passed since this country grew enough food for its inhabitants. That its prosperity may be uninterrupted it will be necessary that it should rely increasingly on foreign produce. That its people should be well fed it is necessary that every facility should be given for the growth and importation of live stock and meat. The table of statistics, giving information of the amount of cattle, sheep, and pigs on the 5th of March, 1866, on the presumption that the returns are accurate, is singularly instructive. In drawing any inference on this subject, we should treat Great Britain separately from Ireland, as the importation of cattle from this part of the United Kingdom is more difficult than it would be from Belgium or France, and nearly as difficult as from Denmark and the Elbe. In round numbers, the population of Great Britain is about 24,000,000. In one particular only, that of sheep, is Great Britain on a general level with other countries. There is nearly a sheep to every head of population; but of horned cattle, there is only one to about every five; of pigs, only one to every nine. Were the amount of horned cattle in France proportionate only to that of Great Britain, France would have a little more than 6,000,000—in fact, it has rather more than 14,000,000. The same may be said of Austria. In many of the German States the proportion is higher still. In Denmark the cattle are not very much less numerous than the population. In the United States there is rather more than one head to every two of population. With pigs, as I have stated, Great Britain is very scantily provided. In France and Prussia pigs are one to seven; in Austria one to four-and-a-half. Taking the whole of Europe, the proportion is one to six. In the United States there are more pigs than population. Had the returns supplied us with information as to poultry, the deficiency would have been still more striking. In the year 1865 this country imported more than 400,000,000 of eggs, if the hundreds of eggs be taken, as it has been from the earliest time, at 120. I need hardly inform my hearers of the fundamental canon of prices—that when the supply of any necessary of life falls short of the demand, the price rises in a proportion which I may perhaps venture on calling geometrical; that is, the quantity available for sale is worth increasingly more, according to the deficiency, than the normal or natural supply would be. The statistics of the cattle returns supply the key towards interpreting the high price of meat, and we may be sure that the price of meat would be higher than it actually is were it not for those improvements in stock-keeping by which cattle become more available for consumption at earlier dates—improvements which are yearly developed. This deficiency is not greatly supplemented by importation. Small as the stock of cattle is, the annual importations do not amount to more than one-twentieth of the ordinary stock, while that of sheep is, as a rule, but one-fiftieth. During the present year even these quantities must have undergone a serious diminution. Nor is the import of meat large. The most important item is that of bacon. But even here the largest estimate will not give more than the equivalent of 300,000 pigs. The beef seems to be about equal to the supply of 50,000 oxen. It is matter of regret that no facts have been collected by which we might compare the present and past supply of live stock in Great Britain. It is of course always dangerous to trust to impressions or to memory, but I cannot but be convinced that there has been a general and considerable diminution in the amount of live stock in Great Britain for some years past. It is now comparatively seldom that agricultural labourers are able to keep pigs; it is still more rare that they breed poultry. The enormous importation of eggs suggests that the fowls kept in Great Britain are comparatively scanty. But it is probable that the maintenance of insect-eating birds is an important provision in agricultural economy, and that when we find fault with the destruction of small birds we forget that our practice is dispensing with a still more important means for checking the ravages of insects, as well as for supplying that great deficiency in live stock which seems to characterise our domestic economy. It is possible, too, that the abandonment of much pasture in the northern part of the island to deer forests and grouse moors has considerably lessened stocks of lean cattle and mountain sheep. It is a little dangerous to offer any comment on the second important contribution to the statististical information of the present year. Under existing circumstances we must, if we allude to the electoral statistics, remember the caution of the Roman poet:

> "Incedis per ignes
> Suppositos cineri doloso."

It will be clear, however, that valuable as the Blue-book is to which I am adverting, and singular as were some of the obvious inferences from its contents, the facts are imperfect and the tabulation still more so. One would have desired to see, along with the figures declaring the value of lands and tenements as estimated for income-tax, other similar charges, such as the proportion of assessed taxes, and the amount of the poor-rate. It would have been well, also, had the distribution of the 25 per cent. of "working classes" among the several constituencies been distinctly indicated. Thus, for instance, the persons designated by this name amount to nearly half the constituency of Birkenhead; to not much less in Nottingham; whereas at Birmingham they are taken at less than a fifth, at Bradford considerably under a tenth. Is it possible that the expression "working classes" has been variously interpreted by those who transmitted their reports to the Poor Law Board? But as the returns published in this Parliamentary paper are of considerable interest, it may be confidently expected that fact will be tabulated in a fuller manner hereafter, as they are keenly criticized at present. It might be expected that there would be a close conformity between values at very remote periods of social history. The proportions subsisting between the prices of labour and food are, or should be, so close and unvarying, that we may always suspect, in fully settled countries at least, that any marked discrepancy between values at different periods is suggestive of removable evils. For instance, if the price of food is considerably in excess of the average rate of wages, some cause, which can be eliminated or corrected, can almost always be assigned for the phenomenon. I may mention here, in illustration of this rule, that during the 13th and 14th centuries the prices of barley and oats, wheat being taken at 100, are represented by the numbers 73.14 and 42.05, and that within the last ten years the numbers have been 70 and 45.95. Close as this relation is, the slight discrepancy may, I think, be accounted for by the incidence of the malt-tax in the first case, and the great increase in the number of horses kept in the second. Other concurrent causes may, I make no doubt, be detected, but these I think are likely to be the most dominant. Estimates as to depreciation and exaltation in the value of the precious metals are, however, to be made with extreme caution, because they are liable to many fallacies. Some of us may remember the alarms entertained by M. Chevalier as to consequences likely to be effected on prices by the gold discoveries. It is not, I think, too much to say that these fears, though natural, were grossly exaggerated. For in order that such inductions should be valid, they should be taken from a very wide area, and many disturbing causes should be accounted for or eliminated. The effects of unfavourable seasons and interrupted importations—it is only twenty years since the country accepted the principles of free trade, several years less than twenty years since it has experienced the advantage of that policy—should be recognized in interpreting the money-value of the first necessaries of life; while the effects of speculative purchases and forced sales are equally dominant in the price current of its conveniences. To interpret a rise and fall in the value of money (the efflux and influx of which, as a merchantable commodity, is inevitably more free than that of any other article of value) by the money measure of that which is open to a vast variety of influences, must be an operation in which infinite caution is necessary, in order to prevent the inference from becoming wholly untrustworthy or delusive.

THE SCIENCE OF MAKING HAY.

MESSRS. EDITORS,—Considering the present growth and rapid extension of American agriculture, it would be difficult to over-estimate the future value and national importance of the hay crops of the United States. Viewed as a prolific source of home-made manure, as a power either to improve or impoverish land, as a means of wintering horses, mules, neat cattle and sheep, and supplying, in a good degree, work animals, dairy products, beef, mutton and wool, all will agree that our knowledge of hay-making should be as perfect as the most advanced science and art can make it. From long observation, in the northern, middle, western, and southern States, the writer has reason to believe that our knowledge of the true principles of raising and curing hay is, generally speaking, exceedingly defective; and, in consequence of this defect, our average hay crops are alike small in yield per acre, weathered, woody and weedy, and not unfrequently filled with bushes, briars, sticks and stubble, barely fit to form a part of a compost heap. Passing by the practice of slovenly, non-reading farmers, let us briefly examine the ideas of reading, thinking men, who study the reasons why one system of farm labour and management is better than another.

In your journal of May 24, a correspondent (living in Ohio, where much hay is produced), says: "Cut and cure two acres of grass, same quality, one late and the other early; place the hay where it can be reached freely, and in the following winter turn horses or calves coming one year old to them (and they are delicate eaters, always selecting the best when the opportunity is afforded): he will find the late-cut hay gone, while the other is but slightly disturbed; and he will discover also, that they will thrive much better on the late than on the early mown grass. I write thus confidently from testing the matter myself, and knowing others to have done the same."

The experience of farmers in East Tennessee has, I believe, led them to the conclusion above stated; for they generally mow their meadows of timothy and red-top when the seed is older and riper than that of wheat and rye when harvested. Without further citations, which might be extended to any length, I raise the question:—At what time in the development of common meadow grass do the plants possess the largest amount of *assimilable* nutritive matter? It is easy to answer this question by an honest guess; but such answer has no more value than a guess at the time when the next eclipse of the sun will take place, without any knowledge of astronomy. All will admit that true science alone can give, in the first instance, a true answer to the astronomical question; and I wish all to see, if possible, that true science alone can tell, in the first instance, when grass, clover, and corn plants contain the maximum of available nutritive matter, as food for farm stock. Is the maximum reached not until the seed is fully matured, or, if before that time, how long before?

Professor Way, when chemist to the Royal Agricultural Society of England, made many analyses of grasses when in blossom, or at that stage of development when usually cut, for making hay, in Great Britain and on the continent. Orchard grass was analyzed, also, when the seed was ripe. I do not regard his researches as settling this important inquiry, yet they throw much light on the obscure parts of the subject. He found that orchard grass had ten and eleven-hundredths per cent. of woody fibre when in blossom; and twenty and fifty-four-hundredths per cent. when the seed was ripe. If it were not for this sudden increase of wood in grass and grain plants, during the growth of their seeds, equal to 100 per cent., and often more, no one could doubt the gain of assimilable food during the last days of their active vital functions. But when sugar, or its equivalent, is changed rather more into *wood*, to make straw, as in wheat or rye plants, than into starch to form seeds, when the process of seed-forming is in progress, why should not all this sugar be saved—making wheat, rye, corn, or timothy into hay? If seed is made not directly from carbonic acid, ammonia water, and agricultural salts, but from elements already organised in the leaves and stems of plants, nothing is gained by their new position in the heads of grass or grain. What the ear or head gains the body loses. Hence, corn blades or leaves are nearly worthless for fodder after the seed is fully ripe on the ear. If the soil and atmosphere supply the elements that form seeds after the plants are in blossom, it is difficult to see how corn or any grain can materially improve in the shock. It is to avoid the formation of worthless wood in grass, corn and rye, if wanted for forage, that these plants are cut just before the seed is ripe or formed, when used as hay. If it can be shown that plants gain in weight of organized assimilable substances, after they blossom, as much as they gain in woody fibre, then no loss results by waiting for grass fully to mature before it is harvested; but has any one proved such a fact?

The analyses of Professor Way favour this important conclusion, as the following statements seem almost to demonstrate: He found in 100 parts of orchard grass, cut when in blossom, 70 of water and 30 of dry organized matter, containing 4.06 per cent. of albuminous or flesh-forming principles. The same grass, cut when the seed was ripe, contained 52.57 per cent. of water, and 47.43 per cent. of dry solids, in which there was 10.93 per cent. of albuminous principles. If there is neither loss nor gain in these flesh-forming elements from the flowing to the full maturity of the plant, then, if 30 pounds of dry grass cut when in blossom contain 4.06 pounds of albuminous principles, 47.43 pounds of dry grass, cut when the seed is ripe should give about 6.43 pounds of the same principles. Subtract 6.43 from 10.93, and there remains 4.50 pounds of albuminous matter whose formation is unexplained. I wish to fix in the reader's mind the fact that the flesh-forming substances in orchard grass *are doubled in quantity* during that most interesting and short period of plant life and growth which intervenes between the flowering and maturity of the seed. The problem can be solved in two ways only—either flesh-forming principles are largely and rapidly organized from ammonia, water, carbonic acid, and agricultural salts, at the time when the numerous offspring of the parent plant require albuminous aliment in the greatest abundance, or this aliment exists in a *nascent state* when blossoms appear, so as not to respond to the reagents of the chemist. The former is probably the more rational conclusion, although the latter solution may be the true one.

The female parent in the mammalia elaborates much blood and milk for the benefit of her offspring, to ensure the perpetuation of the species during its fœtal and infant state; and may not the vital functions of plants, when most actively reproducing and perpetuating the species, elaborate the food of needy germs with peculiar force?

A single timothy seed will send up many culms, and each support a rachis that contains 1,000 or more seeds. How does nature provide food for so numerous a progeny? Is she likely, in the face of these obvious and inexorable wants, to suspend suddenly the organization of germinal nourishment? On the contrary, should not the primary formation of food for growing seeds at this time be peculiarly active and efficient? If so, why cut meadow grass prematurely, and at a time when it is transforming atmospheric elements most rapidly and cheaply into flesh-forming principles?

If editors and readers will accept the above as an introduction to a hasty view of the science of hay-making, I will continue the discussion in one or more letters.—D. Lee, Gap Creek, Knox Co., Tennessee.—*Country Gentleman.*

PREVALENCE OF TAPEWORM IN CATTLE.

It is daily becoming more and more apparent that our artificial systems of farming do not altogether harmonise with the natural wants of our cattle. There is nothing very surprising in this; but it is rather singularly striking to hear farmers talking of improving the breeds, while they are thus at the same time undermining the natural constitution of their live stock, thereby predisposing animals to become an easy prey to parasites of infinite variety. At a time when the agricultural press is summing up the thousands of horned cattle that have been carried off by rinderpest, the startling announcement is made that tapeworm has begun to play havoc amongst our lambs, threatening eventually to carry off its tens of thousands, while the plague in flocks is also on the increase. What is rinderpest? and Where comes it from? are questions which we cannot as yet answer satisfactorily. Tapeworm, however, has from time immemorial been known to the medical world; but the questions which more immediately call for solution—viz., What is the cause of its increasing prevalence? and What the source from whence lambs and our other domesticated animals are infected?—are not so easily answered to the satisfaction of practical men.

From the more recent researches in helminthology, it appears that tapeworm, of which there are numerous varieties, propagates its species on what has been termed "alternation of generation." In other words, tapeworm appears in the form of five distinct animals as it were, before it has completed its natural period of existence. In this respect it resembles flukeworm, which also passes through a series of alternations before it can perfect its organism and propagate its species.

It is fortunate for both man and beast that such is the mode of generation in these two tribes of parasites, otherwise they would endanger the existence of the animal creation, owing to the overwhelming number of eggs, so to speak, which they produce in a season, more especially tapeworm. But in its embryonic and cystic stages of being, the existence of tapeworm is so precarious, and surrounded with so many enemies, and in such a conflicting field of opposition, that only a very limited percentage of the whole attain to maturity. Like most other parasites, it is only when embryos and cystic worms find predisposing states of the body and of the intestinal canal of an animal to receive them that they make a lodgement, pass the former into the latter, and the latter into tapeworms. Thus we are informed in the new abridged edition of Dr. Copland's *Dictionary of Practical Medicine* (Longmans, 1866), "First, that mature tapeworms have been reared from full vesicular worms administered when a suitable host was selected; second, that, from the eggs of *Tænia solium* in pigs, from those of *Tænia cœnurus* in sheep and cattle, and from those of several other species, the corresponding vesicular worms have been reared."

Quoting the substance of our remarks from the same authority, the following are the five stages of tapeworm life: "1st, the embryo with its six tentaculi; 2nd, the cysticercus; 3rd, the scolex; 4th, the jointed tapeworm; 5th, the independently-living and sexually-developed joint or section proglottis" (a detached segment of the tapeworm, having received for its scientific appellation this term "proglottis" from its tongue-shaped form). Each of these conditions or stages of life we shall briefly explain as follows:—

1. The proglottis or tongue-shaped section, which has been separated from the posterior of the tapeworm, may either discharge its embryonic brood before leaving the intestine of the animal in which the parent tapeworm lives, or it may be excreted per anus, be taken up, and enter the intestine of another, when digestion or the teeth of that animal, will burst the proglottis, and also the capsules containing the embryonic brood. These capsules are called eggs, but they differ greatly from an ordinary egg, the embryos which they contain being only small vesicles. When the embryos lodge in the intestine they penetrate through its walls by means of their six hooklets, with which they are armed, and either lodge in the tissues, or get into the circulation, where they are found in various parts of the body.

2. When once the embryos are liberated from their capsules and get lodged in a part of the body, as in the flesh or brain, &c., they become encysted, or are surrounded with cysts. The change which the embryos thus undergo in the enveloping process is a new state of existence, forming the second stage in the growth and life of the tapeworm.

3. When the encysting process is completed, the cystic worm with its cyst is termed the scolex, because it often remains in this stage, nursed as it were for an indefinite period of time; and "the third stage consists in the passage of the scolex into activity, to which phenomenon it is necessary that the animal infested by cystic worms should be usually the source of food, or the prey of that infested, or rather about to be infested, by tapeworm." In other words, when the scolex or cystic worm, with its envelope, is taken into the stomach of an animal along with its food, the enveloping cyst in which it lives is digested. The cystic worm, thus set free, finds its way readily to the intestine, where it lodges and becomes a tapeworm by the budding process, so many buds or joints growing behind the head in a very short space of time.

4. This change from the cystic to the cystoid or tapeworm by the process of budding is the fourth stage of the tapeworm's existence. The process of growth or development of the joints or segments is very rapid in some species of tapeworms, as *Tænia mediocanellata*, as will be seen under next head, fifteen inches of tapeworm being generated daily. The joints in the tapeworm immediately behind the head, forming the neck of the parasite popularly speaking, are not perceptible to the eye of the superficial observer; but they become more and more developed towards the posterior, giving to the animal the flat-tape or ribbon form, from which its name is derived.

5. "The moment the hindmost segment or segments of the tapeworm colony has become so far developed as to contain the six-hooked brood ready-formed and enclosed in the egg-capsules, this segment seeks to break loose, either by itself or in company with several others, in order te continue an independent existence either in the same host or in a different one," the detached segments thus set free being termed proglottides. "Kütchenmeister mentions a case of *Tænia mediocanellata*, in which the number of proglottides, which passed almost daily, amounted in the aggregate to upwards of a hun-

dred feet in eighty days, and that in the course of this time one-and-a-fourth foot of tapeworm was passed and generated each day."

The same authority (Copland) says, that *Tænia mediocanellata* may be distinguished from *Tænia solium* by the greater size and thickness of the segments, the size and blackish appearance of the head, and the absence of rostellum and hooks. "It is now well known that the larvæ of this parasite are derived from imperfectly-cooked veal and beef," *i. e.*, those who are infested by *Tænia mediocanellata* get it by eating imperfectly-cooked beef and veal containing the cystic worms of this parasite. Dr. Cobbold says this species is as frequent as the common kind *Tænia solium*. That poor people are more liable to be infested by the latter from eating measly pork—the measles being the cystic worms of *T. solium;* and that the rich, who eat beef and mutton, are more liable to be infested by the former—*T. mediocanellata*. Some races, who eat large quantities of the raw flesh of oxen, sheep, &c., are much infested by this species of tapeworm.

For a more detailed account of tapeworm we must refer to the above authorities. What we have said enables us to return to the solution of our problem, the growing prevalence of tapeworm, more especially in the case of lambs. What is the species of tapeworm with which lambs are now infested? How does the parasite pass through the five stages of its existence? How does it enter the lamb? And how can it be prevented from entering?

To the first of these interrogatories we are not in a position to give a direct answer, not having seen any of the present lamb cases. The sheep is liable to be infested by several species of tapeworm, so that one flock may be infested by one species, and another flock by a different species. Were we to hazard a rough guess, from the imperfect information which we have received, we should say *Tænia mediocanellata*, or *T. cœnurus*, for two reasons—first, on account of the immense number of proglottides discharged; and second, from the efficacy of the oil of turpentine on the parasite in its fourth stage, this being the most effective if not the only medium which can be successfully given to the sheep infected by the former. In both these guesses we may be wrong. The facts of the case, therefore, must be left to decide the question in each example or flock.

The second question relative to the five stages of tape-worm life is surrounded with a greater amount of obscurity. In all probability half-a-dozen answers, and perhaps more, may be given to it. In other words, there may be half-a-dozen ways in which the embryo of the tape-worm may travel through the different stages of its life before it arrives at the last and sexual period, when it becomes maturely developed and capable of continuing its species. Thus we have seen that when the hindmost joint of the tape-worm arrives at a state of maturity, being then full of ova, it separates from the parent colony; but that it may or may not leave the intestine of the animal in which the parent colony resides. In either case it gives birth to its embryonic brood, and then dies. If there is only one tape-worm in the intestine, and not much irritation of the mucous membrane, it may remain and give birth to its brood in the intestine. But if, on the other hand, there are a number of tape-worms in the intestines, the passage being much choked up, and the irritation of the mucous membrane consequently great, the probability is that it will be excreted per anus with the fæces. In either case inquiry has to follow the course of the new-born progeny.

When the proglottis gives birth to its offspring, or deposits its ova in the intestine of the sheep, a large number of the eggs is always excreted, and may be seen in the dung, like sand or small seeds, along with the lifeless body of the proglottis itself; but some may remain in the intestine, and the path which they take is not so easily followed. The ordinary course, according to the data already furnished, is the incubation of the ova, or liberation of the embryo from its capsule, when it would bore its way through the wall of the intestine with its hooklets, and then lodge and become encysted in the tissue. We have frequently found cystic worms in mutton and beef, in some cases nearly as numerous as measly pork; but in such cases the ova or the embryos liberated from these capsules may have been ingested with the food, for the excreted ova are often spread over the pastures by a heavy storm of rain—the feet of the sheep, the winds, &c., so that the grass eaten or water drunk, may contain hundreds of these eggs or embryos. But ova taken into the stomach along with the food, and ova deposited in the intestine, are two very different lines of progression to investigate. It has been stated already, that from the eggs of most kinds of tape-worm corresponding cystic worms have been reared, while these cystic worms have produced tape-worms similar to the parent stock. Such experiments are highly interesting from a scientific point of view, but the practical question at issue is the rearing of cystic worms from the ova left in the intestine of our lambs now infested with tape-worm. Are these lambs also infested with cystic worms? If not, one of two things follows: either the eggs are wholly expelled from the rectum, or else they pass through the five stages of life in the intestine. Is such the case? If, on the other hand, the lambs are infested with both cystic worms and tape-worms two separate questions arise for solution: *first*, how were the cystic worms reared?—from ova deposited in the intestine of the lambs? or from ova ingested with their food? *Second*, how were the tape-worms reared?—wholly from cystic worms ingested with the food? or partly from cystic worms ingested with the food and partly from cystic worms reared in the intestine? The former is the answer generally given, *i. e.*, the lambs eat cystic worms.

These are questions which obviously call for a searching experimental investigation at the present time, in order to settle the important truths which they involve. A whole host of opinions will no doubt be advanced for this purpose, but in such cases opinions go for something less than nothing. Indeed, scientifically and practically speaking, opinions are excluded from the solution of all such questions, physical data only being admitted as evidence. The knife of the anatomist and the microscope must follow the track of the parasite through all its stages of life, in order to determine the truth, and for such the present is surely an inviting opportunity. Moreover, if the embryo of *Tænia mediocanellata* has no hooks or boring apparatus to pierce the wall of the intestine, it must enter the circulation directly by the lungs, either from the windpipe or from being wafted in the atmosphere as dust; which accords with the fact that the heart of the ox is very liable to be infested with the cysticerci of this parasite.

When proglottides and loose or free ova are expelled with the fæces, the former may be devoured by birds and the latter by insects, hares, and rabbits; or the liberated embryos may with their tentaculi lay hold on insects, as snails, caterpillars, &c., penetrate their bodies, and then become encysted for a period.

We have again arrived at cross-roads, where the finger-post points in all directions. Following the birds first: if their bodies form a suitable "host" for the rearing of cystic worms, they will become infested with such; if the contrary, the embryos will either be digested, or else they will be expelled with the fæces, and thus be sown broadcast over the country.

We have here three different routes to take, and in two of them, the first and last, we shall most likely come upon cystic worms; the rearing and nursing of this parasite being our present inquiry. Thus, of the numerous birds that pick up the newly-voided proglottides, some may be suitable hosts for rearing cystic worms, and therefore they will become infested with this parasite; others may be able to digest the ova, which will put an end to the career of the parasite; and in the third and last case, there are doubtless numerous birds whose bodies are chemically repulsive to the liberated embryos, hence they will pass through them, fall to the ground, enter insects, and finally these become cystic worms.

Following next the course taken by the loose or free ova deposited by the lambs, hares, and rabbits on the pastures, it is a well-authenticated fact that many insects greedily devour and live upon the eggs of others. A second class deposits its eggs in the bodies of a third; a fourth penetrates the body of the fifth, and there matures its organism or species at its expense, and so on. Of the infinite variety of examples of this kind more need not be said; suffice it to say that there cannot be a doubt that the eggs of the tapeworm are thus eaten, as in the first example, and that the embryos penetrate the bodies of others, as the corresponding cystic worms of the tapeworm have been found in numerous insects, with which our sheep-pastures always abound, especially after open winters like the past.

The next route we have to take involves the rearing of tapeworms from cystic worms, *alias* the third stage of the parasite's life, consisting of the passage of the scolex into the stomach of the lamb along with its food—the change of the liberated cystic worm into the tapeworm, being thus the fourth stage of its existence, as formerly shown. Dogs, swine, and other carnivora which eat the carcases or entrails of birds, sheep, and other animals infested with cystic worms, do thereby rear in their bodies tapeworm; but lambs are not carnivorous, and therefore they must ingest along with their herbage, as we shall show in our next, the small snails and insects containing the scolex, and thus rear in their bodies tapeworm. Hares and rabbits are often infested with the hydatids of T. cœnurus; and as each of these watery vesicles contains some hundreds of scolices, or tapeworm heads, it is manifest that cœnuri may be reared and spread over the pastures to an indefinite and even alarming extent by hares and rabbits, as will be shown in our next, under the third question, "How do cystic worms enter lambs?"

AN OLD SHEPHERD.

MR. HUGH AYLMER'S SHORTHORN HERD.

HOW THE CATTLE PLAGUE WAS TREATED.

In the spring of this year Mr. Aylmer had a herd of 106 Shorthorns of excellent character. They are now reduced to 44—viz, 8 bulls of various ages, 10 cows, 2 two-year-old heifers, 12 yearlings, and 12 heifer calves. In April this herd was attacked with the rinderpest, and how it is that any are now alive, considering the Order upon Order issued by the Privy Council before and about that period, is the main point of the details which we have now to relate.

When this herd was unmistakably attacked, in spite of the precautions that were stringently put in force, Mr. Aylmer gave the usual notice to the authorities, and applied for permission to treat them in a way that had previously been tried elsewhere with considerable success; but as this application was not met with much promise of concession, Mr. Aylmer put on a bold front, and openly told the authorities that he should not allow his highly valuable cattle to be slaughtered indiscriminately and entirely, for he not only intended to try to cure them, but was resolved and prepared to abide by the consequences. This, of course, caused some astonishment and much correspondence, and it was some days before Mr. Aylmer knew what would be the real effect of his resolution on the Privy Council. In the meantime, Mr. Aylmer had begun and was continuing to treat his cattle, and in certain instances to perfectly remove the virulent disease. Some of the animals thus attacked and relieved recovered, and have since been free from rinderpest; while others relapsed, and were again cured, or, as occurred in one or two cases, fell into a state of collapse, and were consequently killed. In course of time, however, Mr. Aylmer received an authoritative letter which permitted him to "treat," subject to inspection, instead of "stamping out" by wholesale slaughter. This inspection was organized under the personal attention and instruction of Professor Simonds—an element which does not make the course of events less valuable: but our present purpose is to relate, and not to discuss or criticise.

The treatment which was recommended to and adopted by Mr. Aylmer was to place the cattle when attacked under the influence of chloroform by inhalation, and to resort to the use of such stimulants and nourishment as the animals appeared to require or could take. In cases of great exhaustion gruel and linseed tea were accompanied with a wine-glassful of pure spirit, to which was added chloroform at the rate of 2 oz. to the pint of spirit. How this was used will be better shown in connexion with individual cases. The manner in which the chloroform was administered to the animals was by casting and binding them, this precaution being necessary to prevent injury to hips, the other parts of the body, and horns, during the staggering and falling in close quarters which must inevitably ensue. This done, one ounce was put on a handkerchief and applied to the animal by means of a nose-bag. It generally took between 5 and 7 minutes for the animal to be effectually overcome. The following is a brief account of the cases as they occurred, with some of the leading symptoms presented during the progress of the disease:

Henrietta, a cow, was the first attacked. This was on the 12th of April, and she was killed after twelve days' unsuccessful treatment. The next cases came in a batch of 8 two-year-old heifers, all of which recovered after having chloroform administered to them each day for eight days. The next six were young bulls. These, however, were so full of condition that fever ran high; the pores of the skin and lungs partially closed, which caused the vapour, that would otherwise have been given off by exhalation, to flow to the kidneys in excessive quantities, where its acrid character induced a high degree of inflammation in the regions of the bladder, in which urine accumulated, and the animals so collapsed that they were killed. This was new and important experience, and, when other bulls were attacked, powerful diuretics were added to the gruel and stimulants, which so far acted with the desired effect. The next lot was composed of 7 heifers, 2 cows, and 1 steer. Chloroform was administered to them for a few days, and all recovered. The animals which have been cured, we may here remark, are in such excellent condition that no one would suspect they had been so near the end which Professors say they must certainly come to when attacked with rinderpest. Indeed, we never desire to see breeding animals in better trim.

The next case was the first prolonged attack, which was ultimately subdued. Skyrocket, a bull, then a yearling, had thirty-five inhalations of chloroform administered between the 19th of April and the 25th of May. He then got entirely quit of the disease, gradually began to recover from the shock his system had sustained from the remedy as well as the disease, and he is now perfectly well, his eyes being as bright and his coat as blooming as any breeder would desire to behold.

The next was also an interesting case. A white steer had seven inhalations—viz., one a day between the 19th and 26th, and was apparently cured; but in a fortnight he relapsed, and was killed after two days' similar, but this time ineffectual treatment. This was attributable to the first administrations having been applied at too early a stage of the development of the disease. By this time, Mr. Aylmer and his friend Mr. Overman, and their assistants, had become so practised in detecting the first symptoms, that they could tell frequently for days before the disease would develope itself that the attack had begun. It was also found from this and other cases which followed, that to attempt to cure, by this remedy at least, before the complaint had advanced to a particular stage, resulted merely in what may be termed locking up the virulence in some sensitive part of the system—probably the brain and nervous organization—to burst forth with greater danger, if not more virulence, at some future and not far distant period.

The next lot which fell down consisted in a cow and two heifer-calves, which were cured in from ten days to a fortnight, after variable treatment with inhalation of chloroform and other remedies, according to symptoms exhibited. Rosa Lee next fell down, and hers proved to be a highly interesting case. Her attack was addressed a day or two too soon, and the results, as above described, ensued. She had nine inhalations in a fortnight, and was apparently cured; though at the end of seven days, a relapse befel her, when she had an inhalation daily for five days; but, as her appearances were less favourable, her inhalations were increased from one in twenty-four hours to one in twelve hours, for seven days, when one inhalation only was administered the next day. As, however, as this was not found to keep the virulence of the disease in subjection, the two inhalations were returned to, and continued for twenty-one days in succession, when a favourable turn again occurred, and, after eight more single applications per day, she recovered, and is now sleek and rapidly regaining flesh. The first remedy to this animal was applied on the 19th April; and after more than six weeks of this suffering and treatment, her attack subsided, and, being put on tonic drinks, her appetite returned, and she is saved, so far, to perform her valuable services to Mr. Aylmer, and in increasing the stock of the country. This was one of the animals that

Professor Simonds entered as one of those under inspection; and on the 31st of May he said of her: "She is so delapidated that she *must* die." After her recovery, the Professor acknowledged that the true marks of rinderpest, from the virulence of the lymph which the attendant fever generates, were still in her mouth. Here we may ask, How far are these results consistent with the assumed theory and declared opinion of the Professor—that a real case of rinderpest cannot by any possibility be cured? There is no mistake about the character of these cases, any more than there is about the declarations by the Professors in respect to them. This heifer, in particular, was a perfect bovine lunatic for several days during her severe suffering, as was indicated by her groping about her box, running backwards as if attempting to withdraw from the pain in her poll and forehead, rooting her nose into her litter, eating her own dung, and demonstrating other indications of madness.

Guava fell down and was killed, after five single and three double inhalations per day. This cow and one of the above were apparently cured, when Mr. Aylmer was advised to turn them out, on the ground that free air is more conducive to their restoration. This may be all well enough when animals have not been taken up; and it may be better, as we believe it is, not to confine them if they be kept dry and sheltered; but it is a very different thing when they have been nursed in close boxes, as indeed was proved by these animals suddenly relapsing into an incurable condition under such treatment. Daffy Gwynne 5th was the next case, and a very remarkable one. From April 20th she had four single inhalations of chloroform a-day, then two a-day for seventeen days, followed by one a-day for five days, being finished off with two other single administrations every other day. This heifer lived entirely on gruel and linseed tea, with the abovenamed stimulant of spirit and chloroform, a wine-glass-full having been given three or four times a day. She is now alive, looking healthy in every way, and about six weeks gone in calf.

Phillis the Fifth now fell down, and was treated similarly to Rosa Lee; as she, too, now looking and doing well. The next two were heifers also, and after eight and nine inhalations, respectively, they recovered. A three-year-old heifer was next treated, and after one single and three double inhalations her symptoms turned to an aggravated character, and she was killed. A steer fell next, and after five single inhalations he appeared to be cured, but at the end of a fortnight a threatening relapse ensued. This was followed by a prolonged attack, during which he had thirty-three single and double inhalations as his symptoms varied. This latter treatment occurred between the 14th of May and the 15th of June. After all this he struggled through, and is now looking well. Rose of Dereham, a three-year-old-heifer, was next down; she had just calved, and as she was besides in high condition, the fever became of a virulent order, and she was killed the day after being attacked. The above were at off yards, one of which was situated within about 100 yards of cowhouses of two small farmers, one of whom had six and the other five cows, not one of which was attacked, although the adjacent pastures adjoined Mr. Aylmer's, and they could reach over the fence, and, as they did, smell each other's noses and breath.

We now come to the Home Farm, where the more choice cows and bulls of the herd were located. On the 25th of June a bull was taken, and the next day twelve cows, all of which were killed at the end of from five days to a fortnight. Phillis, a very fine cow, then forward in calf, came down next; she had a single inhalation a-day for three days, and one after seven days, when she had no more signs of the disease, and has since thriven to beautiful condition. Glauca, twin sister to Guava, had seventeen single inhalations during twenty-four days, and recovered. The next two were cows, and were killed after seven and fifteen days' treatment according to appearances. The next four were cows, and recovered under similar treatment during a period of from one to three weeks.

Here began the beginning of the end of General Hope—Mr. Booth's bull already referred to. Bulls, it appears, are more sensitive under this disease than cows, as their kidneys and urinal passages become inflamed, when the chances are their game is over. By proper precautions, this may probably be averted, which in fact was done in some subsequent cases. The General had a single inhalation the first day, two the second, three the third, when his prostration and burning mouth indicated that his case was hopeless, and on the fourth day he was killed. Golden Gem recovered after two single, fourteen double, and eight other single inhalations between May 2nd and 24th. She is now blooming, and otherwise looking well. A young bull was next attacked, and was killed at the end of seven days. A white bull-calf had four single, eleven double, and eight single inhalations, when he was cured, and now has no appearances of having been attacked.

The next lot was a young bull and two yearling heifers—one of the latter being what is called "half-bred," from having come from a cow with no pedigree. The latter had single and double inhalations per day between May 5 and June 13, when she recovered. The others were cured in half the time.

The next lot of five had to be killed. They were four bulls and one heifer-calf. With this lot an interesting incident occurred. Master Jolly, a yearling bull, fell down on May 6. In this case the disease was modified, but it resulted in his end merely being put off a few days. He had first eight single inhalations, then two a day for six days, next day one, when two a day were returned to for sixteen days; but he then suddenly collapsed, and he was killed. This animal Professor Simonds saw on two or three occasions; and, as late as May 31, the Professor said, "He had *not* the rinderpest, or, if he had, it was only in a very mild form." Mr. Aylmer's practised, and, as it appears, better-instructed eye, told him differently; for what had been kept under could not be driven out, and he was killed on the 6th of June. In a former case it will be remembered where the Professor gave a decisive opinion, he said, "The animal must die," but it did not. In this other case he said it was not diseased; while the animal was so full of it, as Mr. Aylmer knew, that the slightest unfavourable change must end in its destruction. This reverse came, and the bull of course collapsed at once. Thorndale Duke was taken on the same day as the last lot. His inhalations were eight single, six double, one single, two double, and six more single ones, when he lost all symptoms of the disease, and he is now in perfect health in the pasture with the cows, and doing efficient work. Prince of Wales, a big and fat yearling, died after a fortnight's treatment, having for the last week four inhalations a day! From his high condition and fatty nature, however, the attack was so violent that no effectual counter-impression could be made on his system. The last case was a yearling heifer, and it occurred on the 21st May. After twenty inhalations, between then and the 13th of June, she began to mend, and has since perfectly recovered, and is in good condition.

After these lengthened details of the progress of this dire disease through Mr. Aylmer's herd, we cannot enter into any minute individual particulars of the character of the animals themselves. These will be worthy of a column on some future occasion. But this much we may say—the forty-four animals left are, as a whole, a very capital lot. There are no small, weedy animals, but they are chiefly as well-grown and as upstanding as such animals ought to be when they are spoken of as the noble shorthorns; and it is a great satisfaction to see nearly 50 per cent. saved.

There are a few more points which we must not omit to mention. One common cow—a polled red Suffolk—was in the midst of the whole of the disease, and acted as a sort of scavenger to the rest in cleaning up the food left by the diseased animals. This cow has never shown any signs of this disease. On the other hand, five other common cows—all of the same sort—were unmistakably attacked, and cured without difficulty. From this evidence, and our previous observations, we believe that, if Mr. Aylmer's herd of upwards of a hundred had not been high-bred and full-conditioned animals, he would have saved at least nine of them out of ten.

In conclusion, we cannot but say Mr. Aylmer was naturally much affected at the kindness of his friends and neighbours throughout this great trial, and particularly for the services rendered by his neighbour Mr. Robert Overman, who attended to one lot, from 5 a.m. to 11 p.m., throughout the whole time.

A FEW FACTS ABOUT MILK.—The greatest quantity of cream is produced in the shallowest vessels, in proportion to the quantity of milk set. In a dry, warm time, milk is richer than in cold wet weather. The morning's milk is richer than that of evening, and the strippings richer than that milked first. In summer milk is best for cheese, and in the fall best for butter.

FERTILIZING PROPERTIES OF SEWAGE.

I believe the fertilizing value of sewage to be very great when applied under certain conditions. (*a*). The sewage of the old part of the city of Edinburgh has for a long period of time been employed for irrigating meadows; and the grass farm of Mr. Miller, at Craigentinny, has for many years been held up as an example of the wonderful fertilizing power of sewage. This farm consists of 250 acres of land reclaimed from the sea, and which at one time was let at 4s. or 5s. an acre. Over this farm the sewage derived from a district inhabited by 80,000 souls is poured; nothing save grass is grown; and the amount of the produce which it is stated is annually obtained is almost incredible—three or four, and even five heavy crops have been obtained in one year, and that too in a rigorous northern climate. The Craigentinny meadows are let to dairymen of Edinburgh at an average rent of £22 per acre. With respect to the disposal of its sewage, Edinburgh is far more favourably situated than any other large city in the empire; its site being much higher than the surface of the surrounding country; the mere force of gravity conducts its sewage to the meadows which it irrigates. Formerly about 2000 acres were irrigated by the Edinburgh sewage; but the spread of buildings, and other causes, have reduced that number by more than one-half.

(*b*). At Rugby, sewage has been applied to agricultural purposes for some years past; and Mr. Walker, a gentleman in the neighbourhood, receives the whole amount produced in the town, for which he pays a rent of £50 per annum. In 1861 a Royal Commission was appointed to experiment on the sewage of Rugby. The object was to determine the quantity and composition of grass produced on land, a portion of which was to be manured with sewage, and another portion to remain unmanured. Fifteen acres were divided into three equal parts —one for grass on which cows were to be fed, another for grass on which oxen were to be fed, and the third was to be meadowed. Each of these 5-acre divisions was further subdivided into four plots, one of which was left unmanured, and the others received respectively different quantities of sewage. Some of the results obtained are tabulated in the following table:—

PRODUCE GIVEN TO OXEN.

Plot.	Sewage required per annum.	Actually applied to end of October.	Total Grass per acre.				Increase of Grass, per 1000 tons of sewage.			
			tons.	cwt.	qr.	lb.	tons.	cwt.	qr.	lb.
1	—	—	9	5	3	5	—	—	—	—
2	3000	1872	14	16	3	8	2	19	1	7
3	6000	4423	27	1	0	10	4	0	1	9
4	9000	6153	32	16	3	8	3	16	2	9

On the grass given to the milch cows the effects of the sewage were still more favourable, as will be seen in the following table:—

PRODUCE GIVEN TO MILCH COWS.

Sewage applied.	No. of weeks the produce kept a cow.	Gallons of milk per acre.	Value of milk at 8d. per gallon.			Value of milk from increased produce of 1000 tons sewage.		
			£	s.	d.	£	s.	d.
—	19.0	321.0	10	14	3	5	0	0
1387	40.9	570.7	19	0	6	5	19	10
2804	58.8	820.4	27	6	11	5	16	8
4226	68.9	961.3	32	0	10	5	0	11

In these trials it is shown that the application of sewage was attended by a very great increase in the produce of grass. "Deducting the value of the milk from the grass of the unsewaged from that of each of the sewaged acres, reckoning it at 8d. per gallon, it appears that where about 1400 tons of sewage were applied, during the seven months, the produce calculated for each 1000 tons of sewage actually applied gave an increased amount of milk to the value of £5 10s. 10d.; where twice that amount of sewage was applied, £5 18s. 8d.: and where three times the quantity, £5 0s. 11d." The value of the milk obtained from an acre of unsewaged grass was only £10 14s. 3d.; whilst from the most highly sewaged grass the value of the milk amounted to no less than £32 0s. 10d. The Rugby experiments, which were conducted under the direction of Mr. J. B. Lawes—so well known for his invaluable chemico-agricultural investigations—have been considered somewhat unsatisfactory, on the ground that the sewage was not always applied at the proper time; and Mr. Walker states that the experiments were in some respects so conducted that their results would not appear so favourable to the sewage as under proper conditions would have been the case; but still the great fact remains, that land abundantly sewaged is capable of producing three times as much milk as the same kind of land when unsewaged.

(*c*). The sewage of the small town of Ashburton, in Devonshire, is distributed over the greater part of a valley let at the rate of £6 per acre, whilst the rent commanded by the unsewaged fields is only £1 per acre.

(*d*). The sewage of Mansfield is poured over lands in the vicinity of the town, which in consequence have been raised in value from 3s. per acre to £12 per acre.

(*e*). The sewage of Carlisle, of Leicester, of Watford, and of two or three other towns, is applied to the useful purpose of fertilizing the soil; and although pecuniary failures in some instances have arisen from futile attempts to concentrate the sewage or to distribute it over too wide an area, still in every case the remarkable manurial power of the article is strikingly exhibited.

(*f*). On the continent the sewage of towns is in some places utilised on a large scale. Some time ago our Government appointed a commission, composed of Messrs. Way, Austin, and Southwood Smith, to draw up a report on the system of irrigation followed in the North of Italy. In this report it is stated that the sewage of the city of Milan is employed in irrigating about 4000 acres of land situated at a distance of a few miles from the city. Each acre receives annually about 9000 tons of sewage, in which are contained the egestæ of forty persons. This land possesses an extraordinary degree of fertility, and becomes so charged with rich organic matter that its surface is periodically pared, and the parings used to manure other lands not so favourably circumstanced. A Dr. Chiappa has a farm of 580 acres near Milan, which is manured with the sewage of the city. The portion devoted to grass contains 80 acres, yielding annually 22 tons of produce per acre. The grass is partly made into hay, partly consumed in the green state, and is found sufficient to maintain 100 cows. It is calculated that the 9000 tons of sewage applied to each acre are equivalent to £4 8s. worth of well-decomposed manure; but it must be observed that the sewage of Milan is commingled with the water of the river Vettabia, and is consequently more dilute than the sewage of Dublin. The conclusions at which these Commissioners arrived were chiefly as follows:—That the experience of the application of sewage in the neighbourhood of Milan affords a striking illustration of the immense advantage which the command of large quantities of mere water alone confers upon agriculture; that the fertilizing virtues of the water are enormously increased by the addition of sewage, and by its temperature being raised by its passage through a town; that the health of the population of the districts manured with sewage is not worse than that of the population of regions in which pure water irrigation is carried on; that notwithstanding the elevated temperature of Italy, no disagreeably odorous emanations arise from the sewaged fields; and, finally, the Commissioners condemn in very decided terms the folly and extravagance of the British people, who by most expensive arrangements seek to get rid of a manure which ought to be equivalent to the annual exportation of many hundred thousand tous of guano.

(*g*). With respect to the application of sewage derived from manufactories, public institutions, and other large establishments and villages, there is abundant evidence to show that the general results have been satisfactory. Alderman Mechi states that the use of sewage on his celebrated farm at Tiptree Hall proved highly productive and remunerative. The Earl of Essex has constantly employed sewage manure since, I believe, 1857, and with an extraordinary degree of success. This nobleman states that he has obtained from sewaged meadows the large produce of 46 tons per acre, whilst from the same quality of meadow which had not been sewaged the produce amounted only to from 7 to 8 tons. On the Earl of Essex's farm an application of 270 tons of sewage per acre of mangolds produced a yield of 43 tons, or about double the average produce of that crop in England. Latterly the Earl has restricted the application of the sewage to grass lands. Even in the case of market gardens the use of sewage has proved profitable. In the number of the *Irish Farmers Gazette* for 27th August, 1859, Mr. R. O. Pringle gives an interesting account of the results of the application of sewage at Mr. Niven's celebrated farm. Drumcondra, Co. Dublin:—"The system of liquid manure which has been adopted at this farm is very simple. At the upper end of the field there is a large tank, which is kept full of liquid manure of the best description derived from the High Park Reformatory. Before Mr. Niven got this portion of the ground all the sewage from that establishment was discharged into an open ditch, and was, in fact, a great nuisance, as well as likely to prove prejudicial to the health of the inmates. By an arrangement with the managers of the institution, Mr. Niven was permitted to throw pipes across the old ditch and convey the sewage into his own tank; and some idea of its value will be gathered from the fact that the consumption of soap alone in the Reformatory is nearly a ton a week, producing an immense quantity of suds, which, with other materials, combine to form a most valuable manure." At the time of Mr. Pringle's visit there was a fine crop of Kemp potatoes which had been manured with sewage only, and which, up to 11th August, had furnished 11½ tons per acre, a considerable quantity still remaining in the ground. When we consider that market gardens require the largest supplies of manure, and that those in the neighbourhood of London sometimes receive 120 tons of natural manure per acre, I think the case of the garden farm at Drumcondra indisputably proves that sewage is capable of supplying the wants of every kind of crop. This morning I received a letter from Mr. Niven, in which he states that he continues to use, in conjunction with a small proportion of stable manure, the sewage, and that he even applies it to fruit-bearing trees. He says that the effects on the vine and peach trees are "amazing." Here, then, we have a nursery and market garden consisting of thirty acres maintained in the highest state of fertility by the sewage derived from a single establishment, the inmates of which do not exceed eighty in number.

THE MOST SUITABLE CROPS AND SOILS FOR SEWAGE.

With respect to the kinds of crops to which sewage is most adapted, it appears to be admitted on all sides that the natural and artificial grasses are those that have hitherto been most benefited by its application. There are, however, on record the results of experiments, which go far to prove that sewage may under certain circumstances be usefully applied on tillage farms. As a general rule the constituents of a manure are rendered more efficacious by dissolution in large quantities of water, because they are certain to be thereby equally distributed throughout the soil, and each of the plants they are intended to nourish will obtain its fair share.

The advantages of using manure in the form of a dilute solution are clearly shown in Mr. Ruston's paper in the 20th volume of the "Journal of the Royal Agricultural Society of England." This gentleman obtained a large increase in all his crops—grass, green and white—by simply applying the manure for each acre commingled with about 4000 lbs. weight of water. As a general rule, however, I believe that town sewage, which is an excessively dilute solution of manure, cannot be employed to any great extent on tillage farms, more especially on those that are not thoroughly drained.

Light or medium soils resting on a sandy subsoil will be found the best absorbents of sewage, although their power of retaining the fertilizing ingredients is not so great as that of heavy clays. On stiff clay lands, the chief fault of which is their impertransible nature, large dressings of town sewage would not be beneficial—nay, would be the reverse: the fluid would rest on the surface, and render the soil so cold and wet as to be decidedly injurious to most plants. Land of any kind under cereals cannot constantly be the scene of sewage irrigation, for during the long period of the year devoted to the preparation of the ground, a dry and easily pulverulent condition of the staple is desirable, and during the ripening of the crop heat and a very moderate degree of humidity are necessary. It is clear, then, that cereal crops could only be benefited by very moderate doses of sewage applied at only certain periods of the year. Still, where sewage is available, I believe that both white and green crops would be largely served by its use; and if it were in a more concentrated condition than that derived from large towns is, it might be applied during by far the greater part of the year. The use of dilute sewage on a tillage farm being therefore very restricted, it would be unwise to attempt to supply the tillage farmers of a wide area with the drainage of a city like Dublin. Gas companies often find it unprofitable to lay down pipes to certain districts remote from their works, although their commodity is sold at the rate of 4s. or 5s. per thousand cubic feet. It would be still more unwise were sewage utilisation companies to attempt the laying down of pipes over a wide district in order to supply an article at the rate of only 1d. or 1½d. per ton. Grass lands are in a very different condition with respect to sewage; they are ready at almost any time for the reception of that manure; and their produce is, within certain limits, proportionate to the amount of sewage applied.

COMPOSITION AND VALUE OF THE SEWAGE OF DUBLIN.

It is very difficult to arrive at an accurate knowledge of the composition of the sewage of a large city, owing to the many disturbing influences which affect it. The rainfall, the supply of water in each locality, the food of the inhabitants of the district, and the hour at which the article is collected, are all important points which must be taken into consideration in estimating the average value of a ton of sewage. Quite recently I have made an analysis of sewage, consisting of a mixture of no fewer than forty samples, selected at different hours, during both day and night, from different sewers at their outlet into the river. I find on comparing the results of this analysis with those obtained in 1857, that there exists a close agreement between them.

According to the results obtained by my last analysis, 100 tons of the sewage of Dublin contains the following fertilizing ingredients:—

1st. In complete solution—

Nitrogen	16.50 lb.	at £70	per ton	£0	10	3.75
Phosphoric acid	3.85	,, 40	,,	0	1	4.5
Salts of potash	5.12	,, 20	,,	0	0	10.97
Salts of soda	16.63	,, 1	,,	0	0	1.78
Total				£0	12	9.00

2nd. Mechanically subscribed—

Nitrogen	2.48 lb.	at £70	per ton	£0	1	6.60
Insol. phosph. of lime	1.84	,, 8	,,	0	0	1.57
Organic matter	14.00	,, 0 10s.	,,	0	0	0.75
Total				£0	1	8.92
Grand total				0	14	5.92

With respect to the amount of sewage annually produced in Dublin, I have made the following calculation:—The present supply of pipe water is about 9,500,000 gallons per day; the average daily rainfall over the sewered districts is about 5,700,000 gallons. The amount of sewage, therefore, which passes daily into the sewers is 15,200,000 gallons, or 67,857 tons 2 cwts. 3 qrs. 12 lb., which, at the rate of 14s. 5.92d. per 100 tons, would have a money value of £481 14s. 9½d. From these data it will be found that the sewage annually produced in Dublin amounts to 24,767,857 tons 3 cwt. 2 qrs. 12lb., the money value of which is £179,484 7s. 4.8d. I am aware that many persons will consider this estimate of the money value of the sewage of Dublin to be excessive, but I have simply placed the same value upon its various ingredients as I would if they entered into the composition of guano or of other artificial manures.

The value of the sewage of a town may be ascertained by other means than the analysis of the article. By determining the actual value of the egesta of an average unit of the population of a town, and by ascertaining the number of its inhabitants, a pretty close estimate of the value of its sewage (provided, of course, that all the waste matters pass into drains) may be formed. Unfortunately, however, there are considerable differences of opinion as to the manurial value of the excrements of an individual, averaging all ages and both sexes. Dr. Hoffman and Mr. Witt estimate them at 10s. 10d. per annum, while Professor Anderson sets them down at 6s. Whilst agreeing with Professor Anderson as to the amounts of potash, phosphoric acid, and ammonia yielded by a unit of the population, I differ from him as to the prices which should be placed on some of these ingredients. Dr. Anderson states that an adult male excretes daily the following quantities of valuable matters:—

	In Urine.		In Fæces.
Nitrogen....................	214 grains	...	24 grains
Equal to ammonia ...	260 „	...	29 „
Phosphoric acid	50 „	...	25 „
Potash....................	45 „	...	5 „

This gives for the total annual production—

Ammonia...	15 lb.
Phosphoric acid....................................	3.3 „
Potash	3 „

On these substances the value of the whole depends; for though there are other constituents, their quantity is so small and their manurial importance so trifling, that they may be left out of consideration. If the valuable matters be taken at the price at which they are sold in guano, then the annual value will be—

15 lb. of ammonia, at 6d.	£0	7	6
3.3 lb. of phosphoric acid, at 1½d.......	0	0	5
3 lb. of potash, at 2½d.	0	0	7¼
Total..	£0	8	6¼

This estimate, it will be noticed, applies to the excretions of the adult healthy male. Those of the female are less valuable by a fifth; and of children the amount and consequent value depends upon their age. In fact, the quantity goes on gradually increasing to the period of maturity, and then again diminishes when the bodily functions become less active towards the close of life. When the proper allowance is made for these (for which a rather elaborate calculation is required, into the details of which it is unnecessary to enter), it appears that the average value of the substances contained in the solid and liquid refuse for the whole population of both sexes and all ages is almost exactly two-thirds of that above given, or, in round numbers, 6s. per head.

From the above it will be seen that Dr. Anderson values ammonia at £56 per ton, and phosphoric acid at £18 per ton. I, however, value ammonia at £70 per ton, and the soluble phosphoric acid in sewage at £40 per ton. The soluble phosphoric acid in superphosphate of lime and other artificial manures is valued by chemists at a higher rate than this. I also place a value upon the soda salts and the organic matters. Affixing, therefore, a higher value to some of the ingredients of excrements than Dr. Anderson does, I consider the amount annually produced by each individual to be worth 8s. In 1861 the population of Dublin within the municipal boundaries amounted to 254,808. A great number of persons residing in the suburbs, but employed during the day in the city, are not included in the census. There are sewers from a few suburban places which empty themselves into the Liffey. We may assume, then, that the sewage of Dublin which flows into the Liffey contains the mixed excrements of 260,000 persons, worth, at 8s. per head, £104,000. This sum is, however, far short of the amount which I have already stated I considered the sewage of Dublin to be worth, but the difference may partly be accounted for as follows:—In 1862 there were within the municipal boundaries 7,365 horses, 78 mules, 572 asses, 762 heads of horned cattle (including 602 milch cows), 773 sheep, 7,558 pigs, and 1,589 goats: total, 18,697 animals. The census of these animals was taken in summer, when the greater numbers of the horned stock belonging to the dairies were pastured in the rural districts. In winter the milch cows are more numerous in the city, and their liquid excrement no doubt improves the sewage as a manure. The quantity of liquid excrement formed by a cow is at least seven times greater than that voided by a man; and it is almost needless to remark that the egesta of a horse is much more valuable than that from a man. I am under the mark when I put down the average value of the manure produced from each of the animals above mentioned at £1 per annum, or a total of £18,697, which, added to the value of the human effete matter, makes up the sum of £125,697. The soap-suds, refuse parts of food, slops of all kinds from private dwellings, the excrements of thousands of dogs, cats, and birds, and the waste matters from manufactories, which find their way into the sewers, must be worth a large sum as manure. We must also take into account the ammonia and nitric acid which are carried down from the atmosphere into the soil, and are found in the sewage. Even the saline and organic matters contained in the pipe and drainage water, inconsiderable as their amount is when compared with the quantity of pure fluid, come to have no small value when millions of tons of water are dealt with. I venture to say that the potash, soda, and other fertilizing matters contained in 24,000,000 tons of river water, undefiled with sewage, would, if valued at the same rate as if they were constituents of artificial manures, be worth a large sum.

I have endeavoured to show that the estimate which I have made of the value of the sewage of Dublin, as deduced from the results of my analysis of that fluid, is not very much higher than the estimate based upon the assumed value of the egesta of the population, and other effete matter produced in towns. Any difference that may exist must be attributed to the difficulty of obtaining an average sample of the sewage, rather than to the value of the excrements being understated.

PROBABILITY OF THE UTILIZATION OF THE SEWAGE OF LONDON AND DUBLIN.

That the public are at length awakened to the fact that they have it at their very doors sources of manure rivalling in extent the guano islands of Peru, is evident from the eagerness which capitalists have evinced to secure possession of the sewage of London.

Dublin is somewhat more favourably situated with respect to the economic disposal of its sewage than London. It is nearer the coast, where the land best adapted for sewage operations is alone obtainable. I am opposed to the proposal so frequently made to lay down a system of pipes for the purpose of selling the sewage to farmers. The price obtained for the sewage, if indeed farmers could be persuaded to purchase the article, would not pay for the cost of its distribution. In fact, the use of sewage can only yield very satisfactory returns when it is one of the means made use of in the formation of slob lands. At Lough Swilly several thousand acres have been reclaimed from the sea within a very recent period, and the operations have, wherever they were fully completed, realised a good profit. The rent of this slob land varies from 15s. to £2 per acre, but some of it very poor, owing to the want of manure. This is the kind of land which would drink up enormous quantities of sewage, and produce correspondingly large crops. I understand that the Company who propose to apply the sewage of London intend to effect the reclamation of about 2,400 acres of sandy wastes, lying between the North Bull Wall and Sutton, and to convert them into dairy farms. I believe this project contains all the elements of success. The reclamation of this slob land would be a profitable operation *per se*; but when every acre could, by the application of sewage, be rendered equal in productiveness to 10 acres of ordinary land, the operations must, in a pecuniary point of view, prove very remunerative. The only advantages which Edinburgh possesses over this city is, that its sewage flows over the irrigated lands by the force of gravity alone. However, the cost of pumping the sewage of this city up to a height sufficient to give it a fall towards the North Bull would not be very great. The trials made with twenty-five Cornish steam pumping engines in 1851 showed that on the average the combustion of 1 cwt. of coal would, by means of one of these mechanisms, raise 1,600,000 gallons of water a foot high. With these data I calculate that the whole of the Dublin sewage, amounting annually to 24,767,857 tons, could be raised to the height of 15 feet by the combustion of 2,580 tons 12¼ cwt. of coal, which, at 15s. per ton, would cost £1,935 9s. 4½d. This would be only 10 per cent. of the value of the sewage, and would not add £1 to the cost of the dressing of each acre; but here I would remark that the quantity of sewage annually produced in Dublin is sufficient to heavily manure at least 8,000 acres.—*From a work on the "Chemical Composition and Fertilizing Value of the Sewage of Dublin,"* *by* Professor C. A. CAMERON.

COMPOST-HEAPS.

Farmyard dung may be preserved from loss by the action of the sun and air, and made to go a great deal further, by composting it; that is, by mixing it with a variety of substances that will absorb liquid manure and combine with that which is solid. Or, if it is preferred to keep the stable manure by itself, an additional source of supply may be provided by the compost-heap, into which every description of vegetable refuse should be gathered.

Most Canadian farms have some low place upon them where black swamp muck is to be found. Many farms have acres of swamp upon them where this material can be had. These parts of a farm are generally looked upon as worthless, or nearly so, but they are in reality storehouses of wealth. There is nothing better for mixing with stable manure, or any matter capable of decomposing, than this black muck. Indeed so great is the value of this material that a farm is hardly complete without a bit of swamp or a muck-hole from whence it can be gathered. Mud from the bottom of lakes, ponds, or pools is useful for the same purpose, and the longer it has been lying the richer it is in fertilizing matter. Many animal and vegetable substances will have collected and been decomposed in it. The scourings and washing of hill-sides and roads, which find their way into bodies of still water, form rich deposits, which it will pay to cart out, if the water can be let off so as to scrape the bottom.

A compost-heap is a sort of *omnium-gatherum*, into which all manner of substances capable of rotting are collected, and from time to time intimately mixed, until they form one fertilizing mass. Vegetable refuse, weeds, leaves, turnip-tops, road-scrapings, old mortar, turf, sods, kitchen waste, and the like, all find their appropriate place in the compost-heap, and should be systematically conveyed there. Weeds, when cut up with the hoe or mown by the scythe, are usually left to decay on the ground. This is very wasteful: they should be composted. Couch-grass and thistles, two very bad weeds, are rich in fertilizing matters, which ought not to be lost. In making a compost-heap, the earthly and vegetable material of which it is composed should be in about equal proportions by bulk. If swamp muck, or the like, is not to be readily had, good loam will answer the purpose. Loam is capable of absorbing a large amount of rich fertilizing substance. The vegetable and earthly material having been mixed, the heap should be well watered with liquid-manure. The urine from the horse and cow stables may be saved for this purpose. Chamber-lye should also be turned to the same useful account. After being well-mixed, it is well to make the compost into long heaps about three feet high and four feet wide. They should be moistened from time to time with liquid-manure of some kind. Of course, to preserve the heap as rich as possible, it is best to keep it under a roof; but if this is not done, the outside of it must be protected with loam three or four inches in thickness.

A good compost for any common crop may be made in the proportions of one load of barn-yard manure with two or three of muck, swamp-mud or loam, and ashes or potash. The following mixture has been used to advantage by a careful practical farmer: Farmyard manure twenty-five bushels, an equal quantity of muck or mud, and six bushels of leached ashes (or instead of the ashes, one bushel of lime slaked with salt-water). Thirty bushels of swamp-muck and one bushel of guano, thoroughly mixed, have been found to make an excellent compost. The same quantity of muck, with two bushels of bones, also form a valuable compost. Another mode is as follows: Dig peat or swamp mud in the fall of the year. Next spring, mix 8 bushels of ashes with every cord; or with every cord, 20 pounds of soda ash, or 30 of potash, dissolved and poured carefully on the piles. Those who have an ashery within easy distance should by all means avail themselves of the opportunity thus afforded of enriching their land. Leached ashes used alone, or mixed with swamp muck, or used in the compost-heap, are of more value and utility than most people imagine. Many instances have been reported of the beneficial effect of leached ashes applied by themselves; and, mixed with muck and other fertilizers, their influence is often far more beneficial. Yet huge unsightly piles of this valuable material disfigure the country, when it would be a relief to the ashery owners, and a source of incalculable profit to farmers, were they spread on the land. The accumulations of the privy should also be carefully saved. Dry loam thrown from time to time into the receptacle acts both as an absorbent and a deodorizer. Not only will dry earth prevent unpleasant odours arising from this material, but plaster of Paris, copperas, Glauber's salt, sulphuric acid, Epsom salts, chloride of manganise, sulphate and chloride of zinc, and chloride of lime—all cheap substances and easily procured—will have the same effect. Thus the chief objection to disturbing and using this richest of all fertilizers is removed. The Japanese depend almost wholly upon the human animal for their supplies of manure, and there are no people under the sun who succeed in raising such crops as they do from small patches of land. Their little holdings are worked up to the highest pitch of productiveness, mainly if not wholly by the use of a substance which more enlightened nations let go to waste, and allow to pollute the streams. This material, well mixed with loam or plaster, is an important addition to the compost-heap.

Considerations of health as well as economy should induce the farmer carefully to scrape up all the decaying matter upon his premises, and turn it into manure. The gases that furnish food to plants are injurious and even fatal to man. Sulphuretted hydrogen and carbonic acid gas, for example, are very noxious. They are generated in drains and sink-holes, in heaps of dirt, in damp neglected cellars, in ditches, muddy puddles, swamps, and all undrained places were stagnant water collects. Their presence is indicated by the foulness of the air. Whatever is offensive to the sense of smell is more or less injurious to health; and where bad odours prevail, there is liability to disease. Hence the farmer who looks everywhere for manure, and collects it carefully from all places where filth is apt to accumulate, is not only enriching his field, but taking measures to protect his health and that of his family. The sweepings of rooms, scrapings of cellars, dirt that has been lying for a long time under barns and the buildings, the contents of drains, cess-pools, ditches, bogs, dirty ponds, and swamps are all suitable and valuable materials for the compost-heap. Collected together, commingled, and covered with a coating of loam or clay, they not only become harmless but useful. A farmer's premises cannot be too carefully kept clean, especially in the vicinity of the well whence the family obtain their drinking water. The compost-heap should always be made at a distance from the well, and it is a good plan to have under and around every such heap abundance of clay or loam, to absorb all the drainage, and prevent its sinking into the earth.
—*Canada Farmer*.

STATISTICS CONNECTED WITH AGRICULTURE.—The importation of provisions into the United Kingdom during the first six months of the present year exhibits a very considerable augmentation on the four following items: Bacon and hams 48,295 cwts., salt pork 27,619 cwts., lard 117,293 cwts., and eggs (owing, in a great measure, to the advanced price of meat) 54,072,120 in number more than in the corresponding half of 1864. On salt beef the increase is 150 cwts., and on butter 8,893 cwts. The only item of which there is a deficient supply is cheese, to the extent of 50,094 cwts. In the first six months of this year the payments made for foreign wheat amounted to £11,508,676, as compared with £7,462,268 in the corresponding period of 1865, and £10,047,102 in the corresponding period of 1864. Of the £11,508,676 paid for foreign wheat to June 30 of this year, £3,649,398 went to Russia, £1,663,193 to Prussia, and £2,683,389 to France. On the other hand, the payments made in the first six months of this year for wheat from the United States amounted to only £315,160; while in the first half of 1864 the corresponding total was £3,879,304, although it sunk to £212,901 in the first half of 1865.

AGRICULTURAL GEOLOGY.

PLASTIC CLAY.

Plastic clay is the lowest marine formation of the tertiary system, and immediately overlies the chalk, which is the uppermost regularly stratified deposit that covers the globe. It is most generally allowed that a tumultuous marine agency had continued to disturb the face of the globe after the deposition of the chalk, and after making many extensive alterations, and forming new depositions, had given place to inundations of fresh water, which had produced the uppermost formations that are generally called alluvial. The formations that lie next to the chalk show marks of sea agency in shells and remains of fishes, and are hence called the marine formations of the tertiary system, which comprehends all the deposits above the chalk.

The designation of "plastic" was conferred by Cuvier and Brogniart on the clay next to the chalk, consisting of an indefinite number of sand, clay, and pebble beds, irregularly alternating, of which an analogous deposit has been found overlying the chalk in the neighbourhood of Paris. It consists of two beds separated by a bed of sand, the lowest bed being the plastic clay. It is unctuous, tenacious, contains siliceous, but not calcareous matter, and is very refractory in the fire. In England the sands of the deposit are of an almost infinite variety of colours, and sometimes pass into sandstone. The clays also are of various colours and degrees of purity, and are sometimes laminated, passing into fine clay. An argillaceous rock appears as one of the beds on the coast of Sussex. The mineral contents do not appear as veins, but are generally intermixed with the clays and sands of which the formation consists. Coal is, however, uniformly found in parallel beds or layers above and below the sands and clays. The coal is very imperfect, and recently vegetable pyrites, green earth, and nodules of a dark-coloured limestone, selenite, and fibrous gypsum, and also mica, and tubular ironstone, are found in the alternating plastic beds. The organic remains show the teeth of fish and fossil, bones and the branches and leaves of plants, and also more or less of the woody fibre in the vegetable coal. The occurrence of organic remains is as irregular as the alternation of the strata, being found more frequently in the clay than in the sand, and often wanting in them all. The same barrenness is found in the analogous plastic clays of France.

The plastic and London clays are very much allied in their nature and composition, the localities are analogous, and the beds conformable. A just inference may be deduced, that the formations are indentical, and have proceeded from a succession of the same agents, which have been subjected to modified actions that have produced the varied depositions that are observed. The organic remains of the plastic clay are the most strictly marine. The London deposit shows a mixture that contains an advance to the present animal and vegetable forms of life; while in the overlying formation of Bagshot Sands the evidences are fewer and much more faint, and exhibit the expiring efforts of the general agent. The plastic or undermost clay may have proceeded from a turbulent and disturbed state of operations. The London clay has been deposited by a more quiet and orderly movement of action, as is very evident from the massive deposition; while the lighter sands have floated uppermost, and contain the smallest evidence of the general nature.

The deposit of plastic clay is visible overlying the concave area of the chalk which forms the London basin, and for the most part skirts the whole district occupied by the London clay, beneath which the formation lies. Thin beds of it cover the chalk hills of Surrey at Addington and Croydon, Banstead Downs and Epsom, Ashstead and Leatherhead. Both on the north and south sides of the North Downs it dips under the London clay, which to the south is bounded by the rocky escarpment of the iron sandstone. In Sussex the plastic clay is the foundation of the flat maritime district south of the Downs, which extends from near Worthing to Bracklesham Bay, and thence into Hampshire, forming part of the Isle of Wight basin. It is seen from Arundel to the western extremity of Brighton; at which place it terminates, except an outlying portion of it occupying the summit of the chalk cliff on each side of Newhaven harbour. Passing to the south of Salisbury, it runs into Hampshire, and thence into Dorsetshire. In the former county it underlies the London clay, on which Portsmouth and Lymington are built, and which occupies a large area surrounding them. It skirts the London or blue clay in the basin of the Isle of Wight, except near Kingsclere; where, for a short distance, the chalk marl and green sand crop out from beneath the chalk. The country west of the Avon, and a belt varying from three to seven miles south of the chalk, are occupied by the plastic clay. In Dorsetshire the eastern parts of the county are occupied by the plastic clay as far as Cranbourne, Chalbury, Wimbourne Minster, and the Trough of Poole. At the latter place potter's clay, in beds of various thickness, alternates with loose sand, in the plastic formation. It is sent to Staffordshire, and used for pottery. Beneath lies a friable brown coal, which crumbles in water, and emits a weak flame. Pipe-clay skirts the declivity of the chalk Downs, and the plastic clay caps one or two hills on the south-west of Dorchester. In Wiltshire a few out-lying masses of plastic clay run south of a line from Hungerford to Marlborough. The formation occupies the district between the estuary of the Thames and the range of chalk hills of Kent; it skirts the base of the chalk hills by Farnborough and Chatham, and thence by Milton and Ospringe; where dividing, the branches skirt the London clay to Whitstable on the coast, and to Canterbury, which stands upon it; and to the coast of the Reculver, and by the south-west to Sandwich, which is built upon it; and ends a little to the south of Deal. The plastic and London clays are much mixed in the county of Essex; the latter prevails, and the former skirts the district of the London clay in the north-west of the county, terminating at Hadleigh, which is the most northerly point of the formation. Halsted and Coggeshall, with the intervening tracts, are both on the plastic clay. Enfield Chace, in Middlesex, is occupied by it, with a strip along the western boundary by Harefield and Uxbridge. In Hertfordshire the clay of this designation extends from the Essex border at Sawbridgeworth and Bishop Stortford, to the north of Ware, Hertford, and Hatfield, to St. Albans; and from thence along the valley of the Colne, it skirts the London clay to Uxbridge. On the north of this place it takes a westerly direction, to a little on the north of Beaconsfield, in Buckinghamshire; and thence about south, to the banks of the Thames. It is seen again at Reading, in Berkshire; and extends thence, though not in a straight line, to a few miles beyond Hungerford; which may be said to be its extreme point to the west, except at Marlborough, in Wiltshire, as before-mentioned.

The formation of plastic clay that has now been traced in its extent is confined to the south-eastern part of the chalk district of South Britain, and is very much modified in quality when it approaches the oolite formation, and the alluvial depositions of Essex. The extent is not great, as the largest breadth between Houghton Hill and Dorchester averages about eight miles, and there is a considerable tract on the West of Poole Harbour termed the Trough of Poole. The general appearances are narrow, being outcrops from beneath the London clay, and between it and the closely adjoining overlying strata of sands and loams. The surface of the formation is most generally flat, on the north-east of London remarkably so; but it is more elevated on the north and north-west as on the south-west of Hertford. Gentle eminences are seen near Deptford, in Kent. In Sussex the country occupied by it is flat and even low, but towards Dorchester the surface is more undulating; and at Salisbury and at Ringwood there are ranges of considerable eminence. The depth of the bed is not great—in Hertfordshire from 100 to 120 feet, in Middlesex 100 to 200 feet, round Woolwich and near London 104 feet. The vertical cliffs of plastic clay at Alum Bay, in the Isle of Wight, are not less than 1,100 feet thick; but considerable expansion may have proceeded by pressure from the vertical position, which, considering the loose state of the sandy beds, can hardly have failed to be the case. The dip of the beds is conformable with that of the chalk on which they lie—undulating gently to the west near Newhaven, in Sussex. Horizontal is the general direction.

The deposit of plastic clay in the irregularly alternating beds of sands and pebbles with the chief ingredient shows a very tumultuary disturbance of the materials of the globe, and a most disorderly location, which may have succeeded the quiet arrangement and the tranquil deposit of the stratified chalk, on which the tertiary formation rests. The eddying reflux of the waters of the sea, in retiring to the prescribed limits over the face of the globe, may have found an abundant variety of materials, which have been carried about and located by conflicting causes that have operated the irregularities, according as the different actions found the opportunity of development. The beds are not thick nor widely spread; the marine clays and superincumbent sands are wholly confined to the chalk formation, and more particularly to the eastern ranges of that deposit in Britain. The immediate proximity of the chalk on the last stratified marine-deposit understands the clay to have long floated in the ocean, from which it has acquired the very extreme viscous tenacity of texture, which in the ascending series of aluminous bodies becomes gradually more lenient, till it wholly disappears in the fresh-water formations. There is no appearance of decomposing shale in the plastic formation of clay. It is a tertiary deposit, from which rocks have mostly disappeared; and being the first formation, the materials had less time to become aggregated, and were puddled in a very minute reduction. The shales had accompanied the secondary deposits, but do not ascend above the chalk, where a tumultuous agency of waters had not allowed the regularity of stratified subsidence. Hence the varied confusion of the deposits above the chalk, and the very much increased uncertainty of approximating causes.

The plastic clay presents a surface-ground for cultivation that is by far the most obstinate and intractable that is found in Britain. The viscous tenacity is extreme, and binds the whole mass into large lumps, which defy the power of most implements either to pierce or reduce them. The first ploughing in breaking up from grass or stubble requires the power of four horses, and also at any time of the year, except in the earthing-up furrows for seed in October. At that time two horses with a swing plough are sufficient, as the very adhesive soil has crumbled into mould from the effects of the autumnal rains after the summer's baking in the sun. All light ploughs, whether swing or provided with wheels, are wholly inadequate to the purpose of ploughing these lands: the weight is insufficient to pierce the soil; the strength is unequal to the resistances that are offered; the wing of the share cannot force a way among the viscous ingredients; the waxy soil adheres to the metal mould-boards, and is pushed before the concave breast of that provision, and falls off in lumps. The well-known turn-wrest plough has been very properly devised to suit the peculiarities of the soil. The weight and strength of the implement are able to overcome the resistances that are offered; the length of the body ensures a steady motion; the rounded and narrow-pointed share finds or forces a passage through the tough and waxy soil, while the timber mould-boad throws off the furrow, as the soil does not adhere so much to wood as to the cast-iron plate of the common ploughs. The draught-chain of the turn-wrest ploughs is bended upwards to the middle of the beam, by which curvature a part of the drawing power is exerted in pulling and keeping the plough in the ground, which forms the most essential point in the operation in ploughing the plastic clays. This strong and heavy implement is required during the whole process of summer-fallowing, and the strength of four horses is absolutely necessary. The roll or harrows of any weight produce little or no effect on the hardened masses of plastic clay till the change of the season into shorter days and longer nights introduces a cooler influence, and the autumnal rains assist in mouldering the baked lumps of the aluminous earth. At that time the harrows are employed in tearing asunder the pieces of soil, which are very surprisingly softened during the season of autumn. A very minute reduction of the soil is never done or attempted, and is not wished, as a cloddy surface holds and shelters the plants of wheat during winter much more beneficially than a pulverized mouldy top of soil. The clods are dissolved during winter, and cover the wheat plants, and in the spring afford a fine earth to be harrowed with the grass seeds, and acts as a top-dressing. The last ploughing of the plastic clay land, the ridging-up furrow, or the seed furrow, is done by two horses with a swing-plough, and best with a wooden mould-board, to which the soil does not so much adhere as to metal. In wet seasons, when the land becomes heavy, three or four horses are required in the swing-plough, in the last operation of the seed-furrow. The proximity of the plastic clay to the chalk formation has in several places introduced a large mixture of flints into the waxy mass of clay, which, being firmly imbedded in the stubborn soil, render the ploughing more difficult, and increase the necessity of having a narrow-pointed share without a wing, in order to pierce the very firmly-cemented mass of soil. The mould-board is also required to be placed high from the ground, as in the turn-wrest plough, so that it does not come in contact with the furrow till it is raised by the boring of the share; the low position of the metal mould-board of the common plough encounters an overwhelming opposition to its progress, even if the winged share did succeed in piercing the soil and raising a furrow, which it never can accomplish. Not only is the turn-wrest plough absolutely necessary to cultivate the plastic clays, but a heavy kind of the same implement is required for the most obdurate clays, while a lighter plough of the same kind is used on lands of a milder formation of plastic clays, and where the flints are less abundant, and not so firmly imbedded in the waxy texture of the land.

Four earths, including the winter furrow, are generally sufficient for summer fallowing the plastic-clay lands, and the seed furrow before mentioned covers the dung, when the seed is immediately sown by hand, or by drill, in sowing early on these precarious soils. Or the farm-yard dung may be applied in the early autumn, on the last complete ploughing and harrowing of the land; or the ridges gathered up by a swing-plough, when the seed-furrow in October will form the fifth earth, or movement of the land by cultivation. This is the general and most approved process. The tough waxy texture and repulsive nature of the soil debar the action of any manure except that of farm-yard dung in a half-rotted state, which should be used in the quantity of twelve to twenty cart-loads of two horses' draught. In the spring months, top-dressings, as soot, guano, sugar scum, nitrate of soda, or any pulverulent bodies that act only for one year, are very useful to the wheat crop, and also on the succeeding clover crop; but no light or auxiliary manures receive admission into any incorporation with the stubborn soil itself. The solid matters of farm-yard dung remain in the ground, are dissolved gradually, and add to the bulk of the earthy staple, which is naturally very small or none.

The rotations of cropping that can be used on the plastic clays are few, and of the most simple description. Root crops of any kind are wholly and entirely beyond the question. The leguminous plants are not much to be commended, though they may be sown, and the returns are not to be refused. The cultivation reverts to a dead fallow, as the basis of any use of the land, and followed by wheat, as the most valuable of the grain crops. Barley is wholly forbidden, and oats cannot much thrive upon the waxy clay. The course of cropping is used thus:—1st year, summer fallow, dunged and limed; 2nd, wheat; 3rd, clover; 4th, oats. This rotation is too short for any lands that are remote from the sources of extraneous manure; but there is a great difficulty in extending it on the plastic clays. Peas are completely set aside as a crop; and the land not allowing any spring preparation for beans, that plant must be sown in broadcast, and then it is no better than a culmiferous crop. In the early growth the crop of beans may be hand-hoed in broadcast, and the weeds checked, but the benefit that is derived is very trivial. Even the next alternative in sowing beans is denied, by severely and deeply harrowing the winter-ploughed surface, and then ribbing it into ruts by small ploughs, or in drilling the crop by machines for the purpose. In these ways the work is done across the winter-ploughing. Except on the drier modifications of the plastic clays, these operations cannot be done. On the most obdurate plastic clays, and more especially where the flints are abundantly mixed with the soil, any preparation of the land is impossible, except by the operation of summer fallowing for the crop of wheat, and the beans must be cultivated in broadcast, and hand-hoed in the early growth. The bean crop may appear in two ways—1st year, fallow, with dung and lime in 200 bushels an acre; 2nd, wheat; 3rd, clover; 4th, beans;

5th, oats. Or, 1st year, fallow; 2nd, wheat; 3rd, beans; 4th, oats or wheat; 5th, clover; 6th, oats. On the most favourable quality of plastic-clay lands a crop of winter or spring vetches is admitted, and much benefit is derived from its use.

Being consumed on the ground by sheep, the land is prepared for a crop of wheat; the winter crop, by the early consumption, allowing a partial fallowing of the land, and the summer crop giving time for one ploughing of the land in October for the seed furrow. Then the course of cropping will be altered thus: 1st year, fallow, dung, and lime; 2nd, wheat; 3rd, vetches; 4th, oats or wheat; 5th, clover; 6th, beans; 7th, wheat. And 1st year, fallow; 2nd, wheat; 3rd, clover; 4th, oats; 5th, beans; 6th, wheat. The course of five years may be well used on any description of land of the plastic clays, having two years on grass where the land is duly prepared, and the proper seeds are sown. The land being drained in the proper frequency, will no way endanger the sheep by wetness inducing the rot. The rotation will be: 1st year, fallow, dung, and lime in 200 bushels an acre; 2nd, wheat; 3rd, hay; 4th, pasture; 5th oats; and may be extended—6th, beans; 7th, wheat. This course very much benefits the land, by producing the vegetable sward for the growth of the oats, and is well ascertained to be superior to any manure that is yet known. The grass sown may be, per acre: red clover 6lbs., white clover 2lbs., cocksfoot ¼ bush., ray grass ½ bush., dog's-tail 4lbs., meadow fescue 4lbs., catstail 4lbs.

The very clammy and adhesive texture of plastic clays requires thorough draining to be very closely done, and in the distances of four or five yards between the drains. After a very extensive and varied experience in draining the wettest clay lands, we do not hesitate to state our candid opinion that a wider distance will not make the lands dry, and the depth of 2½ feet is amply sufficient, with a foot of earth laid over the stones or tiles which form the cavity of the drains. And we also recommend that the drains be placed longitudinally in the furrows, and the ridges being yearly and permanently gathered up by the plough in the form and width, a convexity of the land is produced, which throws the water to the furrow, whence it passes into the drain through a thin stratum of soil left by the plough, of the thickness not to allow the disturbance of the materials of the drain. There is no better mode yet known of draining the very wettest clay lands.

The plastic clays that lie north of the Thames are very much modified and reduced from the viscous tenacity which is found in the pure qualities of the marine deposit on the southern slope of the north Chalk Downs, which form the south boundary of the London basin. In these situations the flints are very thickly imbedded, and the soil is seen very often in a dry red clay marl, and on the top of the chalk hills, and in a most waxy black stratum towards the lower parts of the declivities. Both conditions form a soil for cultivation that is most perplexing, and of but little value; but being generally joined with other lands in the very varied stratification of these localities, the single value of the plastic clay is seldom estimated—it cannot exceed 12s. or 14s. an acre. The land is much best used in grass; but much manure is required, in ample doses and very frequent repetitions, to destroy the mosses and preserve the useful grasses. The situations of the plastic clays do not favour this use of the land, as being beyond the reach of extraneous supply of the dung of animals and vegetables, which alone can impart any benefit to the waxy texture of the plastic composition. But when a good fresh sward of grass is produced by cultivated relaying, the usual top-dressings will operate with effect.

LONDON CLAY.

London clay occupies the valley of the Thames, commonly called the London basin, extending from the mouth of the river to above Hungerford in Berkshire. It lies deep in the London concavity over the chalk, the borings varying from 400 to 700 feet. This great argillaceous formation is rendered highly interesting by the variety of the organic remains both animal and vegetable, and by the inferences deducible from them. The number of species is small which can be completely identified with recent analogies, and points the comparatively low antiquity; and the vertical position in the Isle of Wight evinces the taking place of convulsions previously to the depositions of the upper horizontal beds, and that a sufficient interval had elapsed to give a very considerable degree of consistency to the clay, therefore these newer strata were accumulated upon it. The name is derived from its forming the general substratum of London and the vicinity, occurring immediately below the vegetable soil, except where occasional deposits of alluvial or diluvial gravel, sand, and fresh water soils intervene.

This formation consists chiefly, and sometimes wholly, of bluish or blackish clay, which is very tough. The variations are inconsiderable, either partial or local, of the chemical and external character. Some of the strata are marly, and effervesce with an acid, and sometimes strongly. In the Isle of Wight, it contains much green earth. Occasionally it includes beds of sandstone. Limestone and siliceous rocks are found embedded in the cliffs of this clay, and inclose the same fossils: the cliffs near Harwich, in Essex, contain beds of stratified limestone. The lead-grey or blue colour changes into dull brown and red, perhaps most usually in the lower part. Green grains and sandy layers occur, which last are often indurated into a considerable rock. Septaria abound in it, or ironstone minerals of a round compressed form, and internally divided by septer, or thin partitions of lime, spar, or pyrites; and some imperfect laminæ of marly limestone have been noticed. Sulphate and phosphate of iron and selenite are interspersed through the London clay, and hence the water of the aluminous stratum is unfit for domestic purposes. It is also suspected to contain some sulphate of magnesia. Amber and fossil resin are found in the gravel about London and Highgate, and at Holderness in the south of Yorkshire.

The number, beauty, and variety of the organic remains render the London clay very interesting, and there are rich repositories of these relics in the cliffs at Harwich, Sheppy Isle, Hordwell, Stubbington, and other places. Shells of the most delicate and fragile form are perfectly uninjured in this clay, except in the rare case of its being laminated. The crocodile and turtle are found in the London clay among the amphibious class of the higher orders of animals, of which the eggs may have been deposited on some dry land that was accessible to the presence of water. Several beautiful species occur of vertebral fish, and the crustaceous division shows the lobster and crab. There are very few genera of recent shells which have not some representation imbedded in this formation; but the specific character is usually different. On the other hand, but few of the extinct genera, so common in the older formations, occur in this; so that it seems to hold a middle character in this respect between the earlier and most recent beds. Shells of the chalk are very rare in this formation, and also on the contemporaneous strata of France. Zoophytes are also extremely rare. Testaceous fossils are uncommonly numerous. Clays and argillites harden by contraction, and shells found in clays are mostly compressed and flatted; but those found in limestone retain the primitive shape, as that rock hardens chiefly by infiltration.

It frequently contains small portions and even masses of wood, more or less retaining the woody fibre, but more frequently having the appearance of being charred, and is of a black colour. They sometimes exhibit the perforations, and even contain the casts of an animal which is considered to be analogous to the "bover," which yet infests the seas of the West India islands. The wood is often surrounded by masses of argillaceous limestone, mostly in the form of septaria, which are characteristic of the London clay—they often contain shells still exhibiting the pearly lustre. The vegetable remains are uncommonly numerous, and the fossils are abundantly found wherever the sea has laid open natural sections, or artificial excavations have been carried on to any great extent.

Wherever this clay is visible in the form of a cliff, or has been perforated in sinking wells, it has uniformly been found to contain nearly horizontal layers of ovate or flattish masses of argillaceous limestone, which are mostly traversed, or have been traversed, by cracks wholly or partially filled with calcareous spar, or sulphate of barytes, which have obtained the name of "septaria." These masses abound so greatly that they have been considered as being characteristic of the London clay, but it is not the only one of the English beds that contains them.

This formation is uniformly marked as consisting of a vast argillaceous deposit, containing subordinate beds of calcareous concretions, sometimes passing into solid rock, or exhibiting some local variations, from the occasional mixture of sand or calcareous matter in the mass of clay. These local changes, however, never prevail to such a degree as to interfere materially with the general identity of character. The London clay possesses all the appearances of a very quiet and continuous deposit, perhaps in deep water, yet not far from shore, since a few considerable remains of land and littoral productions occur in it, as wood, turtles, and crocodiles, but no pebbles nor coarse sands. The temporary turbulence of the plastic clay period had wholly passed away, and only finer sediment in greater quantities found its way to the sea. Having been much exposed to watery action, which it could ill resist, it is often left in insulated hills upon the substrata of sand and clays. Mineral springs, so common to blue clays, rise in considerable number near the metropolis. The most remarkable are those of Epsom (so famous for their sulphate of magnesia), Bagnigge Wells, and Acton. The dense nature of the clay stratum throws upwards in pumps the water of the alluvium, which is limpid and comparatively soft for common use. The water of the London clay is impure and hard, from containing salts, and from the decomposition of the pyrites which abound in the formation. The water drawn from the deeper-lying plastic clay is very limpid and free from salts, and large streams of water rush up when, as circumstances may require, the perforations are extended to the chalk which underlies the whole basin of London, from the chalk of Surrey on one side and that of Hertfordshire on the other.

The range and extent of the London clay as a surface ground is very considerably larger than the plastic formation. It occupies the entire concavity of the area of the chalk, from the hills of Croydon on the south to the northern boundary of the chalk range of Hertfordshire, supporting the metropolis, the upper marine formation of the sands of Hornsey, Highgate, and Hampstead, and the alluvial deposits of gravels, sands, and loams on both sides of the Thames. The county of Middlesex is chiefly occupied by the London clay, and nearly the whole of the county of Essex. In Suffolk it extends from Orford to Harwich, and to the north of Ipswich, and hence to Boydon in Essex. It occupies the south-eastern corner of Hertfordshire at Cheshunt, and also the south-western part by North Mimms, Ridgehall, Aldenham, and Bushey, to Hatfield in Middlesex. Berkshire contains much London clay in the valleys over the chalk, and in the bed of the Thames from Reading down the course of the river; and only a small portion of London clay is found in Buckinghamshire, in the neighbourhood of Staines. In Kent the clay appears on the northern side of the Medway, constitutes the Isle of Sheppy, lies from Whitstable to Canterbury, and thence to Boughton Hill. A mall patch of it is visible on the south-west of Ramsgate, in egwell Bay. Shooter's Hill, near Woolwich, is an insulated ass of London clay, and rises to the height of 446 feet. The ills of Sheppy are 200 feet high. In Surrey, the low part of he county, from near Croydon to the Thames, and from the Kentish border to Hampshire, is occupied by the London clay, overed in many places by the fresh-water alluvium. Some alleys contain London clay between the north chalk range nd the iron sand rocks that bound the Wealden formation. The London clay constitutes the flat maritime district of the uth-west part of the county of Sussex, and in some localities ncludes beds of grey limestone and sandstone, and the limetone composes groups of rocks on the coast. The London lay, with the Bagshot sand, are found only in the north-east f Hampshire, and are much exceeded by the plastic clay. A art of the New Forest is occupied by it, with the country ound Southampton Water; and the whole line of the coast stward from the Avon, and including Portsea and Hayling lands. The few clays of Wiltshire are ascribed to the plastic rmation and Tetsworth bed. In the chalk basin of the Isle f Wight the London clay is very extensive, forming the whole oast from Worthing in Sussex to Christchurch in Hampshire, nd extending from the latter place inland by Ringwood, Romy, Fareham, and passing south of Chichester to Worthing. forms the whole of this tract from the abovenamed places the coast, except where it is covered by alluvium, or by a ndy tract analogous to the Bagshot sands, constituting eaulieu Forest and a part of the New Forest. In the Isle of ight it extends in a vertical position along the island, from lum Bay on the west to Whitcliff Bay on the east, between e nearly horizontal fresh water and upper marine beds on e north, and the nearly vertical beds of the plastic clay foration on the south of it. Bognor rocks consist of it, and e clay forms the bottom of the channel termed the Solent, which is between the Isle of Wight and the coast of Hampshire.

The sinking of wells and the cutting of roads have sufficiently proved the occupation of the above-mentioned tracks by the London clay, as it has been described in treating of the chemical and external characters of this stratum; and the numerous and extensive cliffs which it forms have been mentioned as being particularly favourable to the collection of organic remains which it encloses.

The country formed by this stratum of clay is generally low, and may for the most part be considered as flat, or, at the most, as consisting of very gentle undulations. Here and there, however, it rises. The highest point of 759 feet above the level of the sea is in Essex. Shooter's-hill in Kent is 446 feet, and Richmond-hill and St. Ann's-hill in Surrey are less elevated. Cliffs of London clay are 90 feet high in the Isle of Sheppy, which extend four miles in length, and decline gradually towards the east and west. These cliffs have been formed by the action of the sea, of which whole acres sometimes fall at once. The Isle of Thanet shows cliffs 70 feet in height, and Hordwell cliff in Hampshire is 150 feet high.

The beds of this clay are so nearly horizontal that no perceptible difference from that position has been observed in the chalk basin of London and the Isle of Wight, except in the Isle itself, where the bed is nearly vertical. This extraordinary deviation in regard to position is always treated along with the numerous accompanying beds of sand and clay belonging to the underlying plastic formation; and of the chalk, of which the position is nearly the same. The central chalk ridge is highly inclined, and the plastic and London clay are to the north of it, and are respectively 1,131 feet and 250 feet thick. On the north and south, the more recent formations are horizontal, or nearly so, being deposited unconformedly on the broken edges of the vertical strata. The distributing force that occasioned the vertical position acted along a line that can be traced as far as Abbotsbury in Dorsetshire, in 60 miles east and west from the eastern end of the island. A highly inclined saddle of the substrata may be traced in the continuation of the same line. The geology of Britain cannot present a more extraordinary appearance than the nearly vertical position of the chalk and the two underlying clays, placed in a narrow confinement between the adjacent undisturbed strata. The vertical position is much concealed by grassy slopes; but the cliffs, being constantly worn down by the action of the sea, expose the high inclination to the view of wonder and admiration.

The London clay presents a surface ground for cultivation that is less waxy and slippery than the plastic deposit, but fully as obdurate and intractable in the management. The wet condition of the clay is not slippery; but the soil adheres to the feet. In dry weather the firm land opens into chinks that are both wide and deep, and endanger the traversing of the ground on horseback. In an arable condition, the soil, when the least damp, is pushed before the breast of the plough, and falls from it in large lumps; and, in dry weather, the hardened masses of soil most obdurately resist the action of any implements of mechanical power. The ploughing of the land requires the strength of four horses, with the strong turn-wrest plough, that has been mentioned; and also during the whole summer, till the seed-furrow in October is done by the swing plough of two horses, in ridging up the ground into the proper form. In the dry months of summer, the harrows and roll are not able to produce any impressions on the hardened clods of the fallowed ground, till the approach of autumn introduces a cooling influence and a crumbling effect, when the land falls into a black mould, which is produced by the relaxation of the baked condition of the soil by the heat of the sun. On this pulverization in the end of August, or early in September, the lime, if any, and farm-yard dung are spread, and ploughed under by the swing-plough. The ridges are formed by the land being gathered, and another similar process in October receives the seed, which is covered by harrowing, and the furrows are opened.

The modifications of the London clay are more numerous than of the plastic formation, and the course of crops on the land admits more variation. The texture is somewhat softer, and the general quality is better. Still the management does not differ very much, but may be something more extended, and will prove more useful. The general course, as given below, is too short. First year, fallow, dunged, and lime in 200 bushels an acre; second year, wheat; third year, clover;

fourth year, oats. Extended: fifth year, beans; sixth year, wheat. The beans are drilled across the land on the deeply-harrowed surface of the winter ploughing, and the wheat is sown on the bean-grattan with one ploughing of the land. No soil of the London clay permits any movement of the land in the spring for preparing the ground for beans; and the next alternative is used, of sowing the crop on the harrowed surface. Even this preparation is not allowed by the larger part of the London clay soils, and the seed is placed in broadcast, when it ranks as a grain crop. But in several places this harrowing can be done.

Peas are not introduced in cropping the London-clay lands; but tares are, to a considerable extent, very useful. The winter variety produces an early food, and continues through the summer, when the land, after being manured with the excrements of the sheep, and the weeds being killed by the smothering herbage of the vetch, will be found in a mellowed condition for receiving the seeds of wheat, for which one ploughing is necessary. The spring vetch may be used in a similar manner, and a partial fallowing is often given the land after the herbage is consumed; but the former mode may be preferable. The rotations are as under: First year, fallow, dung and lime; second year, wheat; third year, clover; fourth, oats; fifth, tares; sixth, wheat: or, first year, fallow, dung and lime; second, wheat; third year, beans; fourth year, wheat; fifth year, tares; sixth year, wheat. This course may show too many crops of wheat, and oats may be substituted, thus: First year, fallow, dung and lime; second year, wheat; third year, clover; fourth year, beans; fifth year, wheat; sixth year tares; seventh year, oats. The course of five years, with two years in grass, may be very advantageously used on the clays of the present description, thus: First year, fallow, dung and lime; second year, wheat; third year, clover; fourth year, pasture; fifth year, oats. Extended: sixth year, beans or tares; seventh year, wheat.

The grasses to be grown for pasture are as under, per acre: ray-grass, ½ bushel; cocksfoot, 1¼ bushel; catstail, 4lbs.; meadow fescue, 4lbs.; dogstail, 4lbs.; red clover, 6lbs.; white clover, 4lbs. The seed of the grasses, well mixed, are sown by the broadcast machine, and the surface of the land is well pulverized by harrowings before the seeds are sown, and also after that operation, in order to cover the seeds, when a heavy rolling finishes the process.

Farmyard dung is the only manure that can be used on the clay lands now mentioned, except the usual substances for top-dressings, on the grain and clovers after spring. The adhesive soil does not admit the action of any fine substances, nor any reciprocal affinity of mixed ingredients. The draining of these lands must be frequent—the distance between the drains not exceeding five yards, and are best placed in the furrows, as has been mentioned. The ridges being kept in one form, and being gathered into a rounded convexity by the ploughings, the water is thrown into the furrows, where it passes into the drains with very little hindrance. The depth of 30 inches will allow 21 inches for cavity and 9 inches for the furrow, and, which being about 6 inches, leaves 3 inches of percolating stratum, which is quite sufficient to protect the drain from being disturbed; for, in all purely clay soils, the drains cannot be too near the surface, provided they are not disturbed. The dryness of the land depends on the ready access of the water to the drains from a distance and from the top.

Both the London and plastic formations of clay are much best used in grass; but the contiguity is understood of a plentiful supply of rough manures for top-dressings, such as London and similar large towns can afford. The applications must be very liberal, and frequently used. By these means the fields of grass round the metropolis have been converted into a rich hot-bed of production: an earthy stratum has been formed (in which the roots of the grasses are fixed) that has little connection with the clay below, and which has been produced by the decay of the earthy matters of the dung and the roots of the herbage. Even in inland situations, a large use can be made of this clay-ground in permanent grass, especially where land of some more easily arable formation is joined with it in the same farm. This arrangement should be much studied in the pitching of farms; and, the clays being always interpolated among other deposits, the extents of ground are not required to be large in order to include a variety of soils, which, inducing a mixed cultivation, very much increases the relative value of the different descriptions of land. A farm is truly a heartless concern that is wholly composed of such clays as the plastic and London deposits; but being joined with loams, sands, and chalks, as they generally are, the cultivation is not so irksome, nor the occupation so disagreeable. The London clay is most generally accompanied with the plastic formation, and both depend upon the chalk and also upon the peculiar deposit of that stratification, and are chiefly confined to the basin of London. A small part is lodged in the basin of the Isle of Wight, and the quantity beyond the north boundary of the London concavity is considerable. It extends from Reading, in Berkshire, down the valley of the Thames, to the mouth of the river. Both formations are much alike, differing not much in the materials, but in the quantity and variety of the ingredients, and something in the time and extent of the deposition by agencies of a turbulent and quiet operation. The London clay is poor in quality as cultivated land, and it requires much manuring to raise upon it any crops of the ordinary amount and quality. The individual value would not exceed 12s. to 16s. per acre, and the best qualities of the ground will be required to reach even that amount. The inferior soils of that denomination scarcely rise in value beyond the cost of seed and labour.

The quantity of lime that is used on the plastic and London clays must be very liberal in amount, and the surface of the land must be very finely pulverized, that the powdered lime may be ultimately mixed with the earthy alluvium. Clay is a very bad conductor of heat, and a large quantity of lime, or the element of caloric, is required to impart a warmth to its aluminous mass. The quantity of 200 bushels is a medium allowance, and must be repeated in at least every third return of the fallowing of the land. Distant applications of lime are lost in effect between long intervals.

GAULT CLAY.

Gault, golt, or gebingsart (German) imports, with stri meaning, an earth of the hills or mountains, as it lies betwe the layers of the upper sandstone, which is covered by th chalk. It is therefore a marine formation, being included the secondary strata, which everywhere exhibit the most e dent marks of an aqueous agency in the deposition. It is t argillaceous member of the green-sand group, which is v intimately connected with the cretaceous system; and the t beds comprehend all the layers, from the lower, or iron-sa to the upper chalk, which is included.

The complete system here contained is found in many pa of England; but, not unfrequently, deficiencies occur, t upper sand being largely developed and often wanting, a the intervening gault and the lower sand being much co tracted, and the latter body almost wholly disappears. T proper position of the gaults is the dividing stratum between upper and lower green sands, that are commonly called green and iron sands. The average thickness is about hundred feet; and no remarkable peculiarity of mineralogi aspect or chemical composition distinguishes the gault, exc a general tendency to admit green grains into its mo sandy portions. It yields a most rich supply of mollusc remains—many of them minute, and of the greatest beauty and presents a varied treat to the conchologist. Small, ir gular ironstone nodules are found in it; and the varied ab dance of organic remains serve admirably to complete t catalogue of fossils of the cretaceous system. The colour the gault clay is dark blue, and often light grey.

The gault must be considered as the "shale" or the clay accompaniment of the upper deposit of sandstone, which immediately covered by the chalk; consequently, it deserves place among the clays from the shale. The organic fo point to an epoch anterior to the present zoological perio and being placed below the chalk, the kinds of life are n extinct that are imbedded in the argillacous deposit. It for universally a characteristic narrow valley under the cha formation; and as it lies below that huge deposit of the upp sandstone, a very deep working denudation must have operated on the exposure of the gault in the comparatively few places where it occurs. This vast power may have carried the chalk from the whole Wealden formation of Kent, Surrey, and Sussex, and laid bare the gault clay and iron sands, the valleys being afterwards filled with the fresh water-clay of the Weald of these counties.

The gault clay is seen near Godstone, in Surrey, in the south valley, at the foot of the North Downs, and called "black land," and is largely accompanied with the sands of the same deposit. In Sussex and in Kent it is seen in several places covering the iron sands, and cropping out from beneath the green sand. In the Isles of Wight and Purbeck it separates the iron and green sands, and follows with the same relations the range of the green iron sand in the surrounding chalky districts. In Buckinghamshire it forms the Tetsworth clay above the chalk-marl; and the ferruginous sandstone is interstratified between them. All these formations are much covered and concealed by the *débris* of the chalk hills, which, being mixed with the clay on the so-called gault, forms the rich vale of Aylesbury. In Berkshire the appearances of gault are very small, and when in conjunction with the sands, the mixtures almost wholly destroy the character. In Bedfordshire the blue gault is much mixed with the chalk-marl, the former being reckoned identical with the Folkstone clay. In Cambridgshire the chalk rests upon a blue clay, called in the county "gault," which is considered a variety of the chalk-marl formation that crops out from beneath the north-western boundary of the chalk. The surface extent is large, and the thickness variable—from two hundred to two hundred and twenty feet. In Wiltshire the gault, or Tetsworth clay, occupies a narrow tract surrounding the superior formations, and runs by Swindon and Devizes into Somersetshire. In some places it is covered by the green sand; and in the vale of Wendover it is seen to skirt the upper sand. In Yorkshire the Speeton clay underlies the chalk, but does not graduate into it. The organic remains are numerous, different from those in the chalk, and also different from those in the strata below. They appear to have analogies to the gault of the South of England, and also to the Kimmeridge clay, but the former prevail. This clay is mentioned as being the gault; but the necessary sand deposits are wanting.

The gault appears in the pure condition in Surrey, where the denudation has been complete, by the removal of the superincumbent sandstone and chalk. The next-best specimen is the Tetsworth clay of Oxford and Buckinghamshire, which has not been so much denuded, but is largely intermixed with the waste of the chalk-hills, which has very much modified the character. In the counties of Huntingdon and Cambridge, the large quantity of chalk-marl wholly alters the formation of the underlying clay, which overlies the iron-sand. The diluvial *débris* of the neighbouring chalk covers deeply all the surrounding contiguities of formation. The gault is very much or almost wholly altered by the absence of the upper sand, and being graduated into by the superincumbent chalk, which passes into a marl, and commingles with the argillaceous deposit.

The cultivable character of the true gault of Surrey is very similar to the most obdurate plastic clay. The stubbornness of the soil is not quite so very tenacious, and the viscous quality is somewhat more tender. But the general quality compels a course of cultivation that is applicable to the very stiffest clays; and any difference that can be adopted is not equal to a separation of the name. Green crops are wholly inadmissible; and no preparation can be given to the land in the spring for a crop of beans. The bare-fallowing of the land for wheat is necessarily adopted; and the beans are sown in broadcast, as on the stiffest plastic clays. It is difficult to advance improvements on lands of this description. Where no auxiliary cultivation can be admitted to the process of summer-fallowing, the course of cropping must be short, in order to have the process repeated, as no ameliorations can be done between the operations. Consequently, the crops are all of the scourging nature; and the lands being naturally poor in quality, one natural and the other adventitious, concur in rendering the cultivation both heartless and profitless to the husbandman. A crop of beans is generally understood as a self-cleansing crop; and when circumstances deny that property, the use of the plant becomes little eligible, if not wholly objectionable. The excretory roots of the bean may confer some little benefit to the soil; but, as no cultivation is given to the land either in the spring or during the summer, and no manure being applied, the crop is no better than a grain crop, and the surface is always more encumbered with weeds after an imperfect crop of legumes than when a culmiferous crop has succeeded. The four-years' course is: First year, fallow (dung and lime, in 200 bushels an acre); second year, wheat; third year, clover; fourth year, oats. The shortness of this course raises the great objection to its use; but, for the reason before given—that no intermediate assistance can be given to the land between the fallowings—the repetition of that process becomes the more necessary, to put the land into the best condition for being cropped. Wheat is the most valuable crop that can be got, even in the small quantity that is grown on the gault clays. Oats thrive very poorly on the waxy clays, from want of the loamy adhesiveness; and clover is placed under the same predicament. It is not eligible—in fact, it is objectionable—to have two crops of the same plant in one course of rotation; yet when beans are introduced, there seems a necessity for the admission. Thus: First year, fallow (dung and lime); second year, wheat; third year, clover; fourth year, beans; fifth year, wheat. Oats may be sown in the fifth year; but experience shows that wheat is in all cases the most profitable adoption. A longer course would stand thus: First year, fallow (dung and lime); second year, wheat; third year, clover; fourth year, oats; fifth year, beans; sixth year, wheat. This rotation is much the best-adjusted, if the bean crop could be so fashioned as to impart some benefit to the land, by manuring and working, in order to sustain the following crop of wheat. But if the most stubborn gault clays do not allow any preparation, not even deep harrowing, of the ploughed surface, on which to drill the beans, the crop is therefore put in broadcast; and during the early growth the weeds are checked by hand-hoeing. Consequently, the cropping of the land for six years, till the fallowing returns, is too severe a process of usage, and is scarcely admissible on the clays now described. Vetches thrive very poorly on the gault clay; but a crop is often useful occasionally in winter, tares being consumed on the ground by sheep during summer, when the land will be found in a mellow condition for being sown with wheat, with one ploughing, manured by the excrements of the sheep, and the weeds killed by the smothering herbage of the vetch. This arrangement beneficially defers the fallowing process, but never supplies its place.

The course of cropping on all plastic clay soils is much more advantageously prolonged by having grass for two or three years, and depastured by sheep and cattle. The land is rested, and acquires a grassy surface, on which in the decomposition the oats are nourished. A crop of oats is wholly owing to this vegetable decomposition, and the freshness which the soil obtains contributes the food and support of future crops. The rotation would be—First year, fallow (dung and lime); second year, wheat; third year, clover; fourth year, pasture; fifth year, oats or pasture; sixth year, oats.

The grasses to be sown are—Ray-grass, half bushel; cocksfoot, quarter bushel; meadow fescue, four pounds; catstail, four pounds; dogstail, four pounds; red clover, six pounds; white clover, four pounds. Our own experience in the management of clay lands has been very long, and extensively varied, and most fully justifies the recommendation of the course of cropping last stated, as the most useful and beneficial on all lands that deny the use of green crops. The land being thoroughly drained, and the herbage being young and fresh, sheep are very safely grazed upon the surface, and the pasturage is more valuable than any one of the scanty crops that are obtained by the constant cropping. The course may be lengthened to eight years, thus—First year, fallow (dung and lime in 200 bushels) second year, wheat; third year, clover; fourth and fifth years, pasture; sixth year, oats; seventh year, beans; eighth year, wheat. This rotation comprehends the use of pasturage and beans, which prepares the land for oats and wheat in the most superior manner.

The true gault clay requires the strong turnwrest plough of Kent for the purposes of cultivation, and the entire management differs nothing from the most viscous clays, though the waxy adhesiveness is somewhat less, though still clinging to the implements, and requiring to throw it off the timber mouldboards of the Kent plough. Harrowing and rolling are not much required during the summer fallowing, as the land falls during autumn into a very fine and soft powder on the surface, in which the wheat plants have a slender hold, and are often thrown out before the second growth of the spring obtains the firm consistency; consequently it is preferable to have surface in a cloddy condition of roughness, between which the roots of the wheat plants get a hold of the firm ground underneath, and the falling into pieces of the clods during winter and spring covers the plants and protects the roots. Farm-yard dung is the only manure that can be used, and is applied on the fallows for wheat. The usual top-dressings are applied to the young crops in the spring. The draining of the gault clay must be frequent in the cavities, being five yards apart, and filled in the usual way. The value of the gault land by itself will not exceed 12s. or 14s. per acre.

The modified gault in the Tetsworth clay presents a soil that is very considerably relaxed in the viscous adhesion, and in which the obdurate quality is very much diminished. The commingling has been very large with the chalky detritions, and the character partakes of the mixtures with the argillaceous deposit. The aluminous quality is still obstinate, and the land must be cultivated by the summer-fallowing process, which can in no case be omitted. But the land can be ploughed with a strong swing plough drawn by four horses in the winter furrow, and by two horses during the summer operations. The usual harrowings and rollings can be used in the cultivation of this clay land, but which at some seasons gets into a peculiar character of baffling management. As in all clay lands, all operations must be done in dry weather, as a small degree of wetness glazes the soil, and cements the particles. The texture of the soil hardly allows any preparation in the spring for beans, and deep harrowing becomes necessary, on which the seed can be sown by drill machine, or in ruts that are made by small ploughs; and both modes are done across the winter furrows. If no manure is applied, the movement of the soil by the hoeing is very beneficial to the land. The course of cropping will be—First year, fallow (dung, and lime in 200 bushels an acre); second year, wheat; third year, clover; fourth year, oats; fifth year, beans; sixth year, wheat. And with pasture: fourth year pasture; fifth year, beans; sixth year, oats—or fifth year, pasture; sixth year, oats. The grasses to be sown are: Ryegrass ½ bushel, cocksfoot ½ bushel, meadow fescue 4 lbs., catstail 2 lbs., dogstail 2 lbs., red clover 6 lbs., white clover 2lbs. In every case of sowing grass seeds the surface of the ground must be finely pulverised by harrowings before the seeds are sown, and repeated after sowing. The heavy roll finishes the process.

Farmyard dung is the only manure which the Tetsworth clay will receive, except in top-dressing the spring crops on the young braird. The draining may be done in the distance of five or six yards between the drains, and filled as usual. The value of the land is about 16s. per acre, producing three to four quarters of wheat. The quality of the land is inferior to the best sorts, but superior to the most viscous clays in the plastic and gault.

The so-called gault of Huntingdon and Cambridge is still further removed from the true type than the clay of Tetsworth. The land is still tough in the texture, and partially viscous, and requires the process of the summer fallowing to prepare the ground, as green crops are denied. But the swing-ploughs are sufficient, with four horses for the winter furrow, and two during summer. Draining is not universally required, as the clay is much dried by the chalk in mixture. The mode of draining, the systems of cropping, manures, and grass seeds are the same as for Tetsworth clay. The quality of the land is superior, and fetches a higher value, being much mixed with turnip-soils of the chalk formation.

The gault clay is confined to the chalk districts, and to the south-western portion of that range of formation. Except in Surrey, the true type is not found. The clay is often almost wholly lost in the upper sand; and when the sand is absent the chalk descends into the gault, and very much alters the constitutional character. The name is preserved, and applied to the clays that are seen associated with the sands below the chalk, though the true deposit is seldom exposed, and consequently not much known. The gault is seen in the perfection of a cliff of 120 feet thick at Folkstone, and resting distinctly on the lower green sand, the section being well exposed, and the stratum exceedingly fossiliferous.

FISH AS FOOD.

The great importance of fish as an article of food may be clearly shown by a comparison of the total supply of fish and beef to London in the course of a single year. Neither in the case of fish nor of beef is it possible to give accurate statistics; but it has been roughly estimated that London consumes 300,000 fat cattle annually, which, at an average weight of 6 cwt. each, would amount to 90,000 tons of beef. At this moment there are between 800 and 900 trawl vessels engaged in supplying the London market with fish, and assuming the average annual take for each to be 90 tons, this would give a total of some 80,000 tons of trawled fish: this, irrespective of the vast quantities of herrings, sprats, shell-fish, and of other descriptions of fish which are supplied by other modes of fishing. The weight of beef and of fish annually consumed in London is thus in no great disproportion. But the price is very different. The fisherman receives, on an average, little over £7 a ton for his fish, prime and offal together—the farmer is readily paid for his beef not less than £60 a ton. But this disparity of price becomes the more remarkable when tested by the practical experience, not of the producer, but of the consumer. The buyer of fish in the West-end of London finds that, on the average, his fish costs him more per pound than his beef or mutton; and when inquiry is made, the salesman at Billingsgate readily admits that the retail dealer gets an enormous profit on the small quantity of fish he disposes of. It might be thought that the competition of trade would rectify any demand for excessive profit; but, in this case, it does not seem to have that effect. While the fishermen receive 3d. to 4d. a pound at Billingsgate for prime fish, the buyer is charged 1s., 1s. 3d., and 1s. 6d. a pound by the retailer. Some check might probably be put upon this extravagant rate of profit by a daily return inserted in the newspapers, and signed by the clerk of the market, of the wholesale prices of the various kinds of fish sold in Billingsgate. The evidence we have taken, coupled with the increasing scarcity and high price of butchers' meat, leaves no doubt in our minds that a great field for profitable enterprise is open for the application of increased capital and skill to the sea fisheries of the United Kingdom. Within the last two years a single London company have increased their fishing fleet by ten sailing and two steam vessels, and are now building two more steamers. The same course is bei followed by others; and though, by such means, the supply fish to Billingsgate is constantly increasing, it fails to pace with the demand. The well-known fishing-grounds in North Sea are, even yet, only partially fished. The Dogger Ba which has an area of several hundred square miles, and most prolific of fish, is to a great extent unworked by trawlers, and new grounds are still being discovered where are found in great abundance. Between England and the co tinent the average depth of the German Ocean is 90 f One-fifth of it is occupied by banks, which are always be added to by the muddy deposits of the rivers of both countri In extent they are equal to the superficial area of Ireland. these banks the animals of the ocean chiefly resort, and great and prolific field is free to the industry of all. The duce of the sea around our coasts bears a far higher proporti to that of the land than is generally imagined. The frequent fishing-grounds are much more prolific of food the same extent of the richest land. Once in the year an of good land, carefully tilled, produced a ton of corn, or ⅔ or cwt. of meat or cheese. The same area at the bottom of sea on the best fishing-grounds yields a greater weight of fo to the persevering fishermen every week of the year. Fi vessels belonging to the same owner, in a single night's fishin brought in 17 tons weight of fish, an amount of wholeso food equal in weight to that of 50 cattle or 300 sheep. Th ground which these vessels covered during the night's fishi could not have exceeded an area of 50 acres. When we co sider the amount of care that has been bestowed on the im provement of agriculture, the national societies which established for promoting it, and the scientific knowledge engineering skill which have been enlisted in its aid, it seems strange that the sea fisheries have hitherto attracted so little of the public attention There are few means of enterprise that present better chances of profit than our sea fisheries, and no object of greater utility could be named than the development of enterprise, skill, and mechanical ingenuity, which might be elicited by the periodical exhibitions and publications of an influential society specially devoted to the British fisheries.—*Report of the Sea Fisheries Commission.*

DEATH OF MR. J. HALL MAXWELL,

LATE SECRETARY OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

It is with sincere regret that we have to announce the death of Mr. Hall Maxwell, of Dargavel, which took place on Saturday, August 25th, at Torr Hall, Bridge of Weir, Renfrewshire. The intimation will be received with sorrowful interest by all classes of the community, and especially by those engaged in agricultural pursuits, with whom he was brought so much in contact as Secretary of the Highland and Agricultural Society of Scotland. From that office, which he filled for twenty years with great zeal and vigour, and proportionate success, Mr. Maxwell had just retired, amidst the thanks and plaudits of the whole agricultural community. He had withdrawn into private life to enjoy, it was hoped, long years of well-earned leisure, broken only by the duties he was still invited to discharge as one of the Extraordinary Directors of that Society which, in a more active capacity, he had so faithfully served. It has pleased Providence to close his life almost simultaneously with his public career, and to call him to a deeper repose than his friends had contemplated for him. The first show which he conducted was at Inverness in the autumn of 1846; and it was at Inverness, in 1865, that he eventually laid down the office which he had filled during a long series of highly-successful shows. Shortly afterwards, a successor was appointed to him in the person of Mr. Macduff, of Bonhard; but it will be remembered that no sooner had that gentleman accepted the position than he was stricken down by a malady from which he never recovered, and which resulted in his death in March last. During Mr. Macduff's illness, Mr. Maxwell continued to discharge the duties of secretary; and it was not till the appointment of Mr. Fletcher Menzies, in May last, that he was eventually released. Mr. Hall Maxwell's last attendance was on the 9th of May, and he never returned to the office of the society. At the time when he undertook the secretaryship the number of members was 2,620, and the funds of the society amounted to £34,000. When he left, the roll of members had increased to 4,200, and the finances to £50,000. We had for some years continual opportunity of observing Mr. Maxwell's administrative ability, while we may give here our own sketch of his career as associated with his portrait, which appeared in the *Farmers' Magazine* for September, 1858:—"John Hall Maxwell, of Dargavel, comes of an old Scotch family, that, we gather from the Statistical History of Scotland, has been settled in the county of Renfrew for nearly six hundred years. Mr. Maxwell was himself born there in 1812, and having adopted the law as a profession, was called to the Scottish bar in 1835. The characteristic energy of the man never allowed him to occupy the ranks of the briefless. He enjoyed, indeed, at one time a considerable practice, more particularly in such business from Scotland as came before Committees of the House of Commons. In the year 1845, however, Sir Charles Gordon, the then Secretary to the Highland Society, died; and Mr. Maxwell being a member of the Board of Direction, as well as with a predilection for agricultural pursuits, became a candidate for the appointment. He was elected to it in the January of the following year; and at once abandoning all further employment at the bar, he has since devoted himself entirely to the interests of the Society. It is not too much to say that he has done so with the most signal success. Mr. Maxwell gives a high reading to the office of Secretary, and his influence and example are something remarkable. The best patrons of the association at once put themselves under his direction, and it is amusing at times to see how dutifully a noble duke or a lofty chieftain receives his orders as to where he is to be at such an hour 'to-morrow morning.' They all, proverbially, work well together, and none more zealously than their Secretary himself. The effect of this has so far been most significant and encouraging. During the last ten or twelve years the Highland Society has progressed and prospered exceedingly. The funds have accumulated, its power has extended, and its constituency greatly increased. The association now numbers nearly three thousand five hundred members, having added much new blood to that original support it traces back to. Still the Highland Society has been in *active* operation for the best part of a century, while it has embraced within its legitimate sphere of action many features which the common run of agricultural associations have carefully kept clear of. So far, for instance, from interfering with any question before Parliament, it has promoted and been the chief agent in the adoption of many measures. One of the more recent and marked of its proceedings has been the recognition by the Society of the Collection of Agricultural Statistics—a question that has brought Mr. Hall Maxwell prominently before the general public. Nothing, perhaps, could speak better to the appreciation in which the institution and its chief officer were held by the farmers of Scotland, than the readiness with which they answered to the call made upon them, and the good will with which they assisted in carrying out the experiment. The machinery, organized and worked by Mr. Maxwell, consisted of a volunteer committee of somewhere about twelve hundred practical men, representing every parish in Scotland. The result of their combined exertions was, that, almost from the first year, very complete returns continued to be made, and at an expense far below what was expected by the Government. The annual cost was originally estimated at six thousand pounds, and such a limit allowed Mr. Maxwell to deal with. For the four years he had the conduct of the inquiry, the information was obtained at something about three thousand five hundred a-year. We have already said this was of the highest and most satisfactory description. All the good men in Scotland were more or less directly engaged in rendering it perfect, and certainly no 'innovation' was ever introduced or familiarized to a people under more encouraging auspices. It was just such a precedent and an example as a Minister would wish for. It is, however, an old story by this, how Routine stepped in, and insisted on Mr. Maxwell explaining why he spent three thousand a-year when it was calculated he would require twice that sum. But something more than an explanation was needed. Indeed, the vouchers and receipts regularly furnished were such as to amply satisfy the most scrupulous. In fact, as a man of honour, Mr. Maxwell himself would be content with nothing less. There was, however, an attempt at petty interference and minute dictation that, equally as a man respecting himself and those associated with him, the Secretary of the Highland Society could not submit to. He had no other course but to relinquish his charge. When, moreover, Mr. Maxwell withdrew from the collection, the whole of his staff resigned with him, and the Agricultural Statistics of Scotland were again all mystery and mere guess work. It is even still very noticeable that whenever the subject is now introduced, either in or out of Parliament, some of the first men connected with Scotland are certain to speak to the integrity and usefulness of Mr. Hall Maxwell. Mr. Maxwell is a landed proprietor in, as well as a magistrate and deputy-lieutenant for, the county of Renfrew. In 1856 he was created a Civil Companion of the Bath; and in the same year he received a decoration—in lieu of the cross of the legion of honour—from the Emperor of the French, in consideration for his services in connexion with the Great International Agricultural Exhibition. These are high distinctions; but we question if Mr. Maxwell would not rank as his best reward the appreciation in which he is held by the members of the Highland Society." On retiring from the office of Secretary, Mr. Hall Maxwell was presented with a testimonial, for which the contributions amounted to £1,650. The presentation was made on the 17th of January last by the Duke of Buccleuch, in the form of a massive piece of plate and a purse of 1,000 sovereigns. In addition to this tribute from individual members of the Society, Mr. Hall Maxwell received a more official recognition of his services, in being requested by the directors to sit for his portrait to be hung up in the Society's hall. The execution of the portrait was entrusted to Mr. Gourlay Steell, to whom Mr. Maxwell gave sittings for the purpose.

RISE AND PROGRESS OF STEAM CULTIVATION.

WESTONING, BEDFORDSHIRE.

The property of Westoning, consisting of about one thousand acres, was purchased twenty-five years ago, by the present proprietor, the Rev. J. W. A. Campion, for a sum proportionate to its condition. At the time Mr. Campion entered into possession, the whole of the lands were in a very impoverished state; they were unenclosed, there being neither boundary nor divisional fences.

The soils are various in character—sandy, gravelly, peaty, and the remainder useful strong land, resting upon a stiff clay. A large tract of peat land which was unreclaimed is now thoroughly drained with tiles of nine and six inches diameter, and bears excellent root and corn crops. The four previous tenants, holding under the system of tenancy-at-will, showed no disposition to improve, and the lands were gradually deteriorated. They followed the most primitive methods of management. The rotation practised was—1, plain summer fallow; 2, wheat; 3, beans; the seed of the bean crop being dibbled in rows, admitting of the hand-hoe being used—which was not always done—to clear the crop of the weeds which covered the ground. The stock kept consisted of about thirty farm horses, a few cows for the dairy, and pigs kept for the use of the farmers' families.

Labourers were only occasionally employed, as the farmers and the members of their families performed most of the farm work. The number of labourers seldom exceeded twelve; and there being little employment in the parish of Westoning, or in neighbouring parishes, the rate of wages paid the farm labourers was from 8s. to 10s. per week; while the poor-rates amounted to 17s. or 18s. in the £. The improvements regularly carried out by Mr. Campion speedily reduced the amount of the rate. During the last fifteen years it has varied from 2s. to 3s. in the pound. The ordinary wage of farm labourers for the last three years has been from 10s. to 12s. per week. The railways have been the principal cause of a rise in the wage. The average tithe-rent of the parish of Westoning is 7s. per acre, amounting to one-third of the rent in former days.

The parish school of Westoning is well supported, and from 60 to 90 children are daily taught. The church—a building of fine proportions—has been thoroughly restored by voluntary contributions, with a small rate raised from the parish.

At an early age the children become independent of their parents by means of strawplaiting and other employment; this, in a great measure, counteracts the beneficial influence of the school. Strawplaiting also proves a very lucrative kind of labour for women. An expert plaiter will sometimes earn 15s. per week; consequently, the young woman who as a plaiter can obtain such a sum for her expertness is sought in wedlock, and the wife often becomes the person who brings in the money to keep the house—the money wage of the husband being partly expended in beer and tobacco. It is stated that strawplaiting was introduced into the district chiefly by Mary Queen of Scots. During her expedition through the province of Lorraine she engaged a number of Lorraine plaiters to return with her to Scotland.' The Napier family, who held the Luton Hoe Estates in Bedfordshire, brought some of the plaiters from Scotland to their estates.

In the autumn of 1857, a steam engine with cultivating tackle was hired for the first time from Mr. Hawks. This was hired for four years, the hire being 21s. per day, and the men's wages paid by the hirer of the engine. Mr. Campion being satisfied with the work performed, he resolved to purchase an engine, with tackle. A second-hand set was obtained from Messrs. J. and F. Howard. A 10-horse portable engine, manufactured by Messrs. Clayton, Shuttleworth, and Co., was purchased for £315. A windlass made by Messrs. Howard, ropes, and other parts, cost £75. These were brought to the farm in the autumn of 1861. Since that time the engine and tackle have been at work when they could be used on the farm, and from 600 to 700 acres have been stirred, a considerable part of which has been gone over twice with the cultivator.

The expenses connected with the stirring are considerable; the soils are naturally stiff, requiring the expenditure of great power to move the implements. Coals cost 15s. per ton at the station, which is distant from about 7 miles. The following is the estimated expense of one day's work—Wages: driver 2s. 6d.; ploughman, 2s. 4d.; windlass man, 2s. 4d.; two anchor men, 4s.; two boys as rope-porters, 2s.; coals, 15s.; oil and tallow, 3s.; wear and tear, 10s.—say two guineas daily as the cost of cultivating, which, if seven acres are done, renders the cost about six shillings an acre.

The lands are being gradually brought under an improved system of management; the essential requisites—draining, cleaning, deep stirring, and manuring—being so executed as to ensure the best results under the circumstances, and the somewhat peculiar conditions of soil and climate. The first portions drained by the insertion of parallel drains deep and wide apart did not prove effective. The drains were cut straight without reference to the crooked, broad, and high raised ridges with deep furrows. The consequence was the land was not rendered dry, since by continual ridging the undercrust of the soil had forced like the roof of a house, and shot the water into the furrows—these being more saturated with moisture than the ridges, the clay upon which the tiles rest had a tendency to subsidence, and to their displacement.

The rotation followed on the heavy lands is—Manure for turnips; barley; seeds, two years; wheat; beans or oats without manure. This rotation is found to be well adapted for such soils. There is no land under a plain summer fallow: mangolds and turnips being taken as fallow crops. The weight of bulbs has seldom been a full average. Chevalier barley proves the most suitable variety. The seed is usually drilled in; the produce has been from 6 to 7 quarters per acre. Clovers: About 100 acres seeded with 8lbs. white, 2 lbs. trefoil (yellow clover), and 1 peck of Pace's ryegrass per acre. Red Clover: Common red is sometimes grown for the saving of the seed for sale. The soil and climate appear to be well suited for the saving of clover seeds. The extent under wheat after green crops or seeds is annually about 200 acres. From 1½ to 2 bushels of wheat prove sufficient for an acre—the seed being put in by a drill machine. The average produce varies from 40 to 46 bushels per acre. A mixture of red and white wheats is preferred; the mixture produces heavier crops. White wheat, grown alone, is liable to become blighted, while if grown as a mixture with red the white escapes.

The farm is so managed as to keep the largest possible number of cattle, sheep, and pigs. The number of farm horses kept is sixteen, these being required to perform the various operations of the farm, supplementing the steam engines. The number of cows kept is twenty-five, the milk being used in part for the rearing of calves, of which sixty are annually reared. The calves are fed, in the first instance, when taken from the cow, upon boiled milk and linseed, and are induced to take pulped roots and chaff, mixed with a little meal, as soon as possible. The cows are good shorthorn crosses, the shorthorn being the prevailing breed in the district. A Hereford bull is kept at Westoning, and the calves got by this bull are bought from the owners of cows not on the property. The price paid is from 35s. to 40s. The heifer calves are spayed, except those intended for taking the place of cows in the dairy. There are usually 200 head of cattle on the farm. Te cattle reared are fattened at the age of two years and two and a-half years. The average price obtained has been from £20 to £25. The cross-bred beasts between the Hereford bull and the ordinary cows kept in the district fatten readily at the age of two years. The cross is not generally so large in size as those of the same age got by a shorthorn bull, but the Hereford cross is preferred from their supposed aptitude to fatten upon comparatively inferior pastures and bulbous crops. The house-feeding consists of cut or pulped turnips, or mangold mixed with cut fodder—cake and meal being given during spring.

The cattle at the time of our visit were all in good health. To prevent deaths from quarter-ill a seton is inserted in the dewlap of the calves. Owing to the occurrence of cases of the cattle plague in the county during the autumn, considerable apprehension was felt for the safety of the cattle kept at Westoning.

There are two flocks of sheep kept; one, originally Leicester, has been crossed for years by the improved Lincoln rams; the other, a Down flock, is crossed by rams bred from the above. Wool of the clip of 1865 was sold at 60s. per tod of 28 lbs., between two and three fleeces weighing the tod. As wool is lower in price this year, though the clip is heavier and superior to the last, it cannot be expected to realise the same amount. Last autumn the hoggets were receiving one pint of a mixture of broken barley and split beans per sheep—this given in troughs, arranged in the pasture fields, so that the whole of the sheep should have access at the same time to the troughs. The sheep penned on turnip land are arranged in lots of one hundred in a pen—the cut turnips being placed in the troughs, as the cutting by a hand machine proceeds—the shepherd, assisted by one or two boys, attending nearly the whole of the day upon the sheep.

A very large number of pigs are fattened for the London market. They are a cross between the Berkshire and the Bedfordshire white pig; some are fattened until they weigh about twenty stones, and are then sold to the butchers. The average number of pigs annually reared by each sow is about ten. The pigs are fattened on a mixture of pea and barley meal. During winter cooked turnips and other feeding substances are largely used. Economy is studied when grain is purchased—the cheapest being selected. The pigs are slaughtered at the age of three, four, and six months—the shepherd performing the whole work of slaughtering and packing the carcases in baskets, which are sent by train to arrive in London during the night or morning.

The barn machinery is particularly good. It consists of a 10-horse engine and boiler, by Messrs. M'Cartney & Drummond, Cumnock, Ayrshire; thrashing machine, erected on a stage, and delivering the straw into a cart, the corn being dressed for market in the barn underneath. A chaff-cutter, by Messrs. Richmond and Chandler; a cake breaker, bean crusker, a pulper, and two pairs of millstones are worked by the steam engine. Some of the articles were purchased second-hand. The whole cost, exclusive of fixing, was £250. There is a saw-rack likewise attached to the machinery, and water is pumped into tanks by the engine to supply the cattle with water during the winter. A farm consisting of 150 acres, leased from Caius College, Cambridge, was taken in hand about two years ago, being closely connected with the other property. It was then, and had been for many years, in a bad state of cultivation, and is now worked by the same horse and steam power as before described. The alteration in its appearance and productiveness so speedily effected prove the almost magical influence of steam cultivation, combined with thorough drainage and scientific treatment. The steam harrow has proved to be a most useful implement, and, following the cultivator, completes the preparation of the soil for the reception of the seeds of root crops.

As to repairs, Mr. Campion says:—"The cost of repairing our cultivating tackle has been heavier than if the machinery had been new, which from experience I should recommend everyone to purchase who wishes to enter upon steam cultivation, being careful to secure duplicates of those portions of the machinery which are most liable to breakage." Bamlett's reaper and Burgess and Key's mower have been used upon the estate with great satisfaction to the proprietor.

The advantages of steam over horse power in the cultivation of the farm of Westoning are stated to be several, and these important. The steam cultivating implements are only used. The depth at which the soil is stirred being from 8 to 10 inches, it is rendered more productive. Owing to the land being prepared for seeding at the proper tine the crops are more certain and uniformly good; drought does not affect the growing crops so soon as where horse-power has been used. The saving of the keep of the horses is considerable; they now, in stirring the soil, perform only the lighter work; the autumn stirring of the stubble lands being executed by steam-power in a manner that horses could not effect without partially compressing the soil and subsoil. The drains now act more efficiently since steam-power was used in stirring the soil by the grubber or cultivator, the plough rendering the subsoil retentive of water.

Total extent of land annually stirred by the use of steam-power:—First year, 157 acres; second year, 429 acres; third year, 537 acres.—*North British Agriculturist.*

THE APPLICATION OF MACHINERY TO THE FARM.

A paper on this subject was read by Mr. Finlayson, Pendreich, at the last meeting of the Logie and Lecropt Farmers' Club, Sir J. E. **Alexander** in the chair.

Mr. **Finlayson** said: It is needless to say, I crave your indulgence for anything I may bring forward to-night on the subject of discussion, viz., "The most Profitable Application of Machinery to Agriculture."

In regard to the thrashing machines, whether plain beater, spike or botting drum, revolving or clank shaker, or whatever has, small pinions and bevel wheels should be avoided as much as possible. Pitch chains are a very easy method of driving the rollers and shakers, but the first and most important thing to be looked at is a good large horse-wheel. First give the horses a good lever power, and the rest becomes easy. Make the horses strong, and you gain the additional advantage of a large outer wheel and pinion, large spur wheel and pinion, large second power and drum pinion, and you thus make four horses do the work of six, with everything the other way. It may be laid down as a general rule that small pinions are ill to turn, and a great drawback to thrashing machines; but the only way to remedy this evil in many cases, and keep up the required speed, is to begin at the beginning and give the horses a good leverage. Not a few of our mill sheds are just as they were when the flail was first flung over the couples as a thing of no use, and was succeeded by the thrashing mill, and it is no wonder they should be a little antiquated. Some of them in the district, where there is a good deal of thrashing to do, are not 23 feet within walls, whereas there should be no shed less than 33 feet. I have had a long trial of both, and the large one, in my experience, has all the advantages I ascribe to it.

There is room for improvement, too, I apprehend, in the way and manner of cleaning our grain. Not a few of our fanners in the district, with little alterations in detail, are the same as when this "terrible deil's wind" was first found out. The prevailing principle of the old fanners is long blades, about 3 feet, some of them more. The invention of fanners was no doubt a great affair, however light we may think of it now—a great improvement on the old plan of cleaning the grain between two barn doors, or going up to the top of a hill, to catch the passing breeze, and perhaps catch the passing shower instead. But we could not expect these men, geniuses though they must have been, to jump to the best construction of fanners at once, and I find, as any one else may find by standing behind them, that in these long-bladed fanners every blade has its own blast. There is a lull and a puff as every blade comes round, and they are of necessity heavy to drive. The most modern fanners, again, which we see taking prizes at shows, are not so long in the blades—somewhere about 2 feet, and not very heavy to drive; but in their haste to attain perfection, as I suppose, in cleaning the grain, they have filled the whole inside with riddles, so that the wind has next to no chance at all in doing its duty, as it has no way of acting upon the grain but through and among these riddles, which is far from right. Grain, you are aware, can only be discriminately cleaned when it is falling, not when it is striking against or resting on anything; and hence the absurdity of blocking up the whole interior of fanners with riddles. Riddles I would have, and riddles I wonder we have not had in all our mills and hand fanners long ago. But then they should be so placed as not to interfere on any account with the winnowing of the grain. There should only be a slight part of the blast allowed to play upon them, and a foot or more clear below, for the wind to act on the grain as it falls from the riddles. I find that wire riddles are apt to get clogged up with corn coats hanging about them, and that pierced iron or zinc is preferable. But to approach perfection in the winnowing of our grain, I would recommend that our fanners be short in the blades and double blasted—that is, that they should have two pair of blades or fans, the one going out when the other is coming in, or working half-stroke to each other, to prevent the lulling and puffing that are in all fanners, and to make a regular and constant blow. Three riddles, when properly applied, may be said to add nothing to the weight of driving, and such a form of fanners would give plenty of room below for the wind to act on the grain; when it is resting on anything, as is too often done, is like striking a man when he is down; it gives him no chance of his life. The strong man is weak then, and so is the strong grain. It is an expensive affair riddling grain by hand, and not every one of our best men can do it. But there is no use for it when it can be done otherwise, for I hold that we are much more able to riddle our grain by machinery than the miller is to sift his meal; and how perfectly he does it, though the one is a much nicer operation than the other!

We ought to leave nothing to manual labour that can be done by machinery. I am only speaking in reference to our own district, for many may be, and many are, I know, far in advance of us in this point. Wherever iron can be introduced into our farm implements, it should take the place of wood; iron can be used with advantage in harrows on the great proportion of land. On some light soils, perhaps, and hilly farms, they can scarcely be made light enough to stand the obstacles they have to meet with. The old Scotch wooden plough is still in use in some parts of the district; but wooden ploughs, in whatever form, are never thrifty. The "Scotch Rational" can be made in its native form, and as light and strong in iron as in wood. It would then neither cling with summer's drought, nor swell and rot with winter's wet—would last generations, in place of a few seasons. But two sets of ploughs are expensive and unnecessary, as one improved iron plough, with a plain broad level sock and a straight coulter, will do winter-ploughing equally as well, if not better, than the other, and be as easily drawn. Very short, convex, sharp-turned, hollow-breasted mould-boards are better for scooping loose land than ploughing it; while a medium length and twist will do fair work on all soils, and prove more generally useful. Wheels, when rightly attached, make a plough very easy to guide; and though a good man at a ploughing-match may make better work without them, a very inferior ploughman will, with a day or two's practice, make superior work with them; and it would be a great saving of our ploughmen's bones were wheels more used than they are. What we call grub harrows, when well made, have been found exceedingly useful in tearing-up and loosening land that has to be often rolled in the breaking-down, and, where land is foul, for taking weeds to the surface. The grubber was thought at one time to take the place of the plough, but now it will have enough to do to keep its own place. A turn of the grubber may sometimes be better than a ploughing—better for keeping in the moisture, for the sake of a braird in dry weather. But there is danger in going too far, as nothing but the plough can turn the soil over thoroughly to the influences of the atmosphere, which influences, although we have them for nothing, are often more enriching to the soil than the best and most costly manures we can apply.

Water-power may be said to be the cheapest of all known powers, when conveniently got; but unfortunately, where most grain is grown, and most needed, it is most difficult to get. And it appears to me questionable whether it would be profitable to keep a steam engine for thrashing alone, for these reasons among many—that we often can't get on our land for weeks together, and in such seasons it is an advantage for our horses to have thrashing to do; and with a good-going machine much of our thrashing can be overtaken in such seasons. Besides, we have Mr. Raines' portable engine and thrashing machine to apply to in a strait, which does all the departments of the work well, and is not long in making a slap in the barn-yard. True it is, that in the Lothians, and many other districts, you will see few farm steadings without the engine stack towering above all around. But in many places the straw is sold and dung is bought, so that when the horses are not on the land they are on the road. Other places, from their proximity to coals, or the dry texture of their land, that can be wrought on at any time, may account for the difference; but in the vales of Monteith and Stirling the straw is generally made into dung on the farm, coals are expensive, and the land is stiff—so tenacious much of it is, that one day's work on it when not in trim would tell on it for a rotation. Steam-power has done much for the world, but comparatively little as yet in cultivation of the soil. Till recently we used to see cotton factories and mills of all sorts in out-of-the-way places—beside burns, and streams, and rivers; but taking advantage of steam-power, we now see the manufacturer birring at his mill, without any such restraint, anywhere and everywhere—in the midst of large cities, on the quays and banks of navigable rivers, where goods can be imported and exported to and from al parts of the world—and we farmers can only say we wish w could get on that way. We hope we will yet get the same advantage of this giant power. The difficulty of applying steam to agriculture is too manifest, from the time it has taken to introduce it. Could it have been done as easily and with the same advantage as in the other case, the steam engine would have been snorting on every farm. There has been no such indefatigable energy or ingenuity, and I should say philanthropy, shown in introducing steam to factories as to farms, for the fact is it was not needed. The manufacturer, as I have hinted, has only to erect his work, set down his engine in the place and position required, and away it goes, saying to itself, we may suppose, "This is the place for me." It is no doubt difficult to estimate the benefit manufacturers and mechanics have derived from the perfection to which they have brought their machinery; but no one thing in our day, I am persuaded, has done more to advance their interests than steam-power. It is like the root from which other improvements have sprung—the trunk on which they grow and flourish; and we, as landlords and tenants whose interests are so linked together, ought to strain every nerve to have this wild young horse broken into our service. Mo people like a young horse to be bold and forward a little i the breaking-in: they say there is something in him. If thi holds true, then you may depend there is something in stea and we ought not to be frightened for any pranks and cantri that may take place at first, and we should be encouraged t persevere from the advance already made in our own, and fro the success that has attended the steps of this bold horse—this noble power—in every department of industry. It h not yet been established, it is true, that cultivation by steam cheaper than by horse-power, but such a comparison is p mature. It is certainly not reasonable that a power that ca into existence yesterday should already cope with another th has been in existence since the time when Adam was a you man, or soon after. It is not so long since we got quit of t gadman for cleaning the plough and guiding the horses; so here may have used him in their younger days. So give th youthful power time—I would not say four or five thous years, but four or five years—and we will get the gadman p off here too, and many other seeming mountains that stand the way of progress. There have been great improveme made since this young wild horse was yoked in our distri which should be noticed, but I must pass on. It may be o served here that this fiery horse eats coal, not corn, and e and drinks only when he is working, decent fellow that he i while our other horses eat and drink, and must be attend to, work or no work, lazy fellows that they are—are th not? No doubt the present extensive form of applicatio steam-power is beyond the reach of the great body farmers, and may have frightened some and grieved othe but it was the larger and wealthier farmers and the m spirited landlords that took the lead in the movement, and was such forms they required, and no one need be concer as it can be brought down to any size or form. I only wis saw it brought out in a form suitable to a farm of 100 acre so; all then would be able to judge of its capabilities and of application in their own case. But I must say that I do like the idea of the engine toiling so far from its work, sho of half its power; for recollect that an engine of 12-hor power, so far as I have seen, only drags two or three plough the work of four to six horses. It is of course easier far to fi fault than find a remedy. But allow me to ask, for the sake argument, Would it not do to have the engine, instead ding at the end expending half its power doing nothing, versing our fields, short-angled corners, and fields of all forms, with a cultivator somewhat on the principle of a clod-usher or Norwegian harrow to travel on, in place of the hind heels? The four wheels for guiding the engine would be the ly compressing weight on the soil, and would do less damage an the pokering and dabbling of the horses' feet. Supposing re were three cultivators, the one going deeper than the er as they came back. The depth could be regulated by els. It would be like tooth and pinion for taking the ine over a height; the wheels would not skip round and e the engine standing helpless, and those who had knolls their farms would not need to consider themselves excluded a share of the advantages of their more favoured brethren the plains. But without joking, if a principle somewhat that described would do, then the gadman—viz., the wire , porters, anchor, attendants, the laying and lifting of this —would be dispensed with, and this magnificent power ght within the reach of everyone. I see many difficulties he plan, but a great many advantages if it would do. At events, it is by stating our views and discussing such topics we can endeavour to help on improvements that so much rest ourselves and community.

me of the other members will give us the advantages of experience of the reaping machines, as your patience be already over-taxed. Allow me to observe, however, though the reaper has much to contend with in our le climate, it is gratifying to see the headway made against obstacles seemingly unsurmountable, since into use. Those only who began with it can estimate ances that have been made. The real improvements, r of effecting them, cannot be appreciated by a casual r. Many thought at one time, that when we got the of a "manual back delivery," we could get no farther. machines at first, when the knife got the least blunt, come to a dead lock for want of power, although driv- thing but the knife; but now, from the knife being made lighter, of better stuff, kept sharper, and other parts made more perfect, we find there is power not only to drive the knife, but a large side-delivery reel to the bargain. Heavy cumbrous machines cannot be expected to be handy or profitable in average circumstances, as, from the laid state of our crops generally, they can only be cut one way, and such machines are about as difficult to take back empty as others are to bring forward full. I am not aware whether our last year's exhibition has brought out any new machine, but if it were the means of perfecting those already out, and bringing them into notice, which no doubt it has, from the number of self side-deliveries ordered in the district, our labour has not been altogether thrown away. The perfecting of the reaper is becoming more and more important for the efficient and profitable harvesting of our crops, and calls for more attention than it receives from farmers' clubs. It is not like an implement that is used all the year round, that can be repaired or improved at any leisure time. It would require to come into the field like a warrior armed to the teeth—without a weak point or flaw in its equipment. The soldier may find out the defects of his armour in the battle-field, but that is neither the time nor place for repairing his loss. So is it with the reaping machine. The harvest field, and throng of harvest, is neither the time nor place for inefficient machines, or for repairing their defects. Stoppages are a great loss and annoyance, but this evil is lessened, you will observe, by the side-delivery, as it can be wrought any distance ahead of the binders, which the back-delivery cannot. Neither is there any time lost by the binders going backwards or forwards, as each has his own row to bind from end to end, consequently more work can be done. But the advantages of the side-delivery come most prominently out in the bean-field, where the lifters are dispensed with altogether. Self side-delivery is the great point of perfection we have long striven to attain, and it is most gratifying to see it brought out so completely in so many different ways, each throwing a lustre on man's powers of ingenuity and perseverance.

SCOTCH *VERSUS* ENGLISH DRAUGHT HORSES.

correspondent of the *Dumfries and Galloway Courier* as follows on the above subject:—

appears to me that there is no branch of agriculture interesting, or of which a more extensive and thorough ledge would do more for the benefit of the farmer and lturist than that part of it which belongs to the breeding mproving of that important animal, the draught-horse. rtheless, it is amazing to hear and see the great amount orance that prevails about the origin and national character of the different kinds of breeds of these most useful als by farmers—those who should have the greatest in- in the subject.

first kind of breed that we shall notice is the much-ed Clydesdale. Perhaps it may not be generally known this celebrated breed of horses have for their progenitors lemish horse, which was brought over here from Flanders e of the Dukes of Hamilton, and on his estates in dale, serving the then small native mares. Thus we the foundation for the superiority of Clydesdale stock, eed by the crossing of these different breeds, which stock became common to the whole district, and gave to this the celebrated name of Clydesdale, thus showing that breed is not indigenous to the vale of Clydesdale. And who observe passing events with attention, it would not much to say that the present breed they have in Clydes- would be again much regenerated by some other new, or of the Flemish, blood being brought into the district, as has been far too much breeding within too close degrees sanguinity, or, as it is technically termed, breeding in- n, amongst them in that district. This mode of pro- g on the part of the breeders is decidedly pernicious, has had a great tendency to create and increase hereditary among the animals, which is by far too much the case them. Of this so-called Clydesdale breed, power more beauty is the prevailing characteristic. They have often heads, ill-defined jaws, and round, sour-looking muzzles. They are somewhat flat in their sides, and plain and low in their quarters. The neck is long, and so are the legs, and flat in their feet; but the barrel is light. The temper is tractable and docile, and they are useful animals for the plough and the cart; but they eat a large amount of food, and are not by any means the cheapest kind of horses for the farmer; and the most of our Scottish farmers who have paid attention to this subject confess that the expense of their horse-keep exceeds that of their brethren in England, unwilling as they are to admit of any superiority over them in matters of this kind.

The next breed that comes under our notice is the English draught-horse, said to be first imported into that country by the Saxons, and subsequently gradually improved in size and power by crossing with the Flemish horses introduced by the followers of William of Normandy. It is recorded of King John that he imported one hundred choice stallions from Flanders, which at that time must have been an important step in the way of improvement, and eminently calculated to raise the agricultural horses to a standard of power and vigour for field-labour and for draught then before unknown. Edward II. in his reign gave a commission for twenty war-horses and twelve draught-stallions to be purchased in Lombardy, requiring all his loving subjects to assist in carrying the commission into effect, which bears strong testimony for his zeal for their improvement. Henry VIII. enacted a law that every brood-mare should be at least fourteen hands high, and prohibited all parties from breeding with inferior descriptions of horses, or with diseased and infected ones, which raised the general character of the horses in the country, and brought in a race of large and serviceable animals. Other Acts of Parliament were passed by the English Government—all with an evident view to the attainment of a large and powerful breed. For example, every archbishop and duke was obliged, under heavy penalties, to keep seven entire horses, each above three years old, and not less than fourteen hands high. The plain reason for enjoining entire horses to be so kept was for the promotion of breeding and improving the stock of horses; and with a consideration that was worthy of a king, the rich and noble were alone compelled to keep stallions, because of their keep being so much more expensive, while the other classes might keep such mares and geldings as they thought proper. No man who has the improvement of that noble animal the horse at heart can doubt but that these prohibitions and regulations are as sound as they are politic. The English cart-horse, as bred chiefly in the midland counties, Yorkshire, Lincolnshire, Cambridgeshire, and Northamptonshire, is a powerful animal. The whole form is so constructed as to possess great power; and the gentle, willing, obedient nature of the animal renders him one of the most valuable slaves of man. His head is finely formed; his neck a little arched; the shoulder thick; the breast very deep, broad, and capacious; shoulders but slightly slanting; the legs, especially the fore ones, very muscular; broad hocks; broad short back, with great rotundity of form and well-ribbed home; short fetlocks and round hoofs complete the picture of one of the most noble and massive animals, combining with amazing strength the gentleness and docility of a pet. One of these fine animals bred in Northamptonshire, appropriately styled the Mammoth horse, was twenty hands (six feet eight inches) at the withers; his weight, 25 cwt. (a ton and a quarter). This horse was not clumsy, but on the contrary he was a grand, graceful, and noble-looking creature, quite free from vice and as playful as a lamb. He is said to have been produced by a cross between the English and Flanders stock.

Of these two breeds we derive this fact from their history, that the origin of the Clydesdale and the English cart-horse is substantially from the same root on the male side, viz., the Flemish stallion, with this difference, that the present breed of English draught-horse has had far more attention paid to his improvement by the frequent introduction of new and fresh blood from different sources, and that greater care has been taken to guard against the introduction and spread of all diseases that have a hereditary tendency; and it surely will not be disputed by any one acquainted with the subject that the original native English mare was equal, if not superior, to the original small breed in the vale of Clyde previous to the introduction of the Flemish stallion into that district.

I may be allowed a few words on the points and qualifications of a good horse for breeding. A sound constitution stands at the head of the list. He should possess this quality not only himself, but all his progenitors; and likewise the wide chest as a first desideratum, and as being the most strictly indicative of this peculiarity—not only wide in the front, however, but continuing the width behind the forearms, further indicated by fulness behind the elbows. A masculine appearance is also another of the indications of constitutional power. Large well-developed muscles are also an indispensable quality. He must have muscular forearms, strong flat legs, broad hocks, elbows not too close to the chest, deep and broad chest, straight short back, round ribs and ribbed home, with a round body and broad loins, long quarters, full and muscular, the neck rather thick and a little arched, and the tail set on in a line with the back, head not too acute, with good broad hoofs. And as polygamy is the rule that is followed in the breeding of horses, the stallion has by far the greatest influence on the horses of a country; therefore it is within the power of breeders, by a judicious selection, to ensure a good offspring with few exceptions. Few things are more certain than horse breeding, for the rule "like produces like" in most cases holds good from generation to generation; and nothing is so unsatisfactory, or so unlikely to turn out an unprofitable speculation, as breeding with a stallion affected with hereditary disease, such as roaring, spavin in all its multifarious forms, boggyhocks, with their distressing and weakening effect on that important part, thoroughpin, ring bone, side bone, splents, shivering or diseased nerves, with their deteriorating consequences, and many others which the horse is peculiarly liable to; and there is scarcely a malady to which the horse is subject that is not hereditary, and increases with every new generation, slowly, but surely, in their virulence, until the progeny becomes utterly useless. Therefore the first symptom of any kind of disease of that nature should be enough to condemn the stallion as a breeding-horse, with all who wish to maintain and improve the breed of our much-prized horses.

Having endeavoured to draw an outline of the rise and progress of the Scotch and English draught-horse, I leave the reader to draw from what has been written his own conclusions. But there is another very important argument in favour of the great benefit which arises to the farmer from crossing his breeding mares with a stallion of pure blood, which the following facts go far to establish: that at all the shows of horses that have taken place around Glasgow this year— Kilbride, which is open to all Scotland; at Bishopbriggs, and at Kirkintilloch, where in these districts the very cream of the Clydesdale is said to be bred—that at every one of these shows the first prize year-old is the foal of a real English stallion horse direct from Cambridgeshire; and in several instances one hundred pounds sterling has been offered for year-old colts and fillies of his stock bred in the famed district of Clydesdale and been refused by their owners, which speaks volumes in favour of the English breed for crossing with; and I am aware of it, if such be on record, that any of the Glasgow Clydesdale prize stallions have produced stock of the same for which any such sums of money were offered.

INQUIRY INTO THE UTILIZATION OF SEWAGE.

In a former paper we drew attention, in a few desultory observations, to the manurial loss sustained in the conveyance of sewage in sewers on the principle of gravitation as now proposed in the Great Main-drainage plan of the metropolis. This loss of manurial elements was illustrated by the familiar example of water flowing on a hard bottom or gravelly channel, which soon purifies itself of all filth thrown into it—the dirty muddy stream becoming in a short distance as clear as it was prior to the filth being thrown into it. When a river runs in a clayey or chalky channel, so that the water becomes muddy with clay in suspension, and also contains lime and other substances in solution; and when sewage or other filth is poured into such a stream, the affinity of the animal and vegetable matter for the oxygen of the atmosphere is reduced—or rather the affinity which exists between the clayey and chalky or limy matters for the animal and vegetable substances is greater than that for the oxygen of the atmosphere, and accordingly much of the manurial elements is precipitated to the bottom; hence the rich alluvial soils formed at the deltas or confluences of such rivers with the ocean, compared with what is formed by the clear crystal stream that flows in its pebbly channel. It was also shown that this manurial loss was of a magnitude and general interest such as to justify a Parliamentary grant from the public purse, and the appointment of a chemical and engineering commission to prosecute the inquiry as to its details. In short, in our last we glanced at the chemical view of this inquiry: in our present paper propose reviewing the engineering investigation of the question.

The engineering problem *de novo* is manifestly to send the sewage to the country, and to apply it to the land with the least possible manurial loss of fertilizing matter. This is not only the *alpha* but also the *omega* of the sewage question, when examined in the light of applied science, so that it includes both the chemical and mechanical problems. The engineering work thus divides itself into three separate subsidiary branches or parts—the first, the collecting of the sewage from water-closets, sinks, public urinals, and manufactories, to pumping stations; second, the forcing of sewage in pipes to country by means of steam-power; and, third, the manufacture and application of the sewage to the land. But before these three propositions can be practically examined, it is first absolutely necessary to know how far the engineer can convey the sewage before it sustains any material loss? and how many times this distance it will flow in a common sewer before it is so wasted as not to pay for its application to land? When fæces of a temperature of 100 degrees is dropped into water of 50 degrees in the water-closet the incipient decomposition that previously existed will be arrested, and a period of time intervenes before solution and a somewhat different kind of decomposition again commences? To what distance can the engineer remove the sewage during this intervening period of time? And what is the rate of manurial waste that afterward takes place for every equal period of time and distance to which the sewage may be conveyed in the ordinary sewers already used in the removal of sewage from towns? And what is the amount of gaseous matter noxious to health that is thrown into the atmosphere—this amount being the equivalent of the manurial loss? If this loss can be obviated, will it cover the expense of sending the sewage some ten, twenty, or thirty miles into the country, as the case may be, to land of a quality the best adapted for its profitable utilization? And what is the rate of waste under different velocities, times, and distances? It is the practical answers to these latter questions that we have to investigate in this paper.

On entering upon an experimental inquiry of this kind, it is evident the work must be isolated, and, consequently, exceptional in many respects; the grand object being to obtain fundamental principles, or practical data, for guidance in the general work of sewage-utilization for agricultural purposes. A single sewer, for example, will have to be constructed, or set apart, for the experiment; and, at the upper end of this sewer, the sewage from a single water-closet will have to be removed, in the ordinary way, so as to ascertain the first intervening period of time, and the subsequent rate of waste as it flows towards the opposite end of the sewer: throughout the whole length of the sewer no fresh sewage being allowed to flow into that under investigation. Having obtained the first measure of the whole distance—that next the water-closet, during which the fresh sewage flows, before any material loss is sustained, and the subsequent rate of loss for any given time and distance—the engineer will experience no difficulty in applying the data thus obtained to the sewage-drainage of any particular town, as the metropolis. But, on the contrary, until such data be obtained, any sewage-utilization project of the kind appears to us little better than groping in the dark, especially in the case of large towns, while the inhabitants of such places are liable to be taxed, and, indeed, are already being taxed, some of them to an enormous extent, for huge, antiquated, unpromising speculations of the most extravagant kind, no more regard being paid to the health of the people than to their wealth! No doubt the large main-sewers of the metropolis, and the common sewers generally of the principal towns in the kingdom, may be profitably used in the land-drainage or removal of storm-water; as such, under any economical system of utilizing sewage, should be kept separate from it; for when it rains in town it also rains in the country, so that the latter, under such circumstances, requires concentrated sewage, and not diluted, then, too, in very wet weather, to such a degree as would destroy land, even the most dry and porous soils, as it would, to use a common expression, "wash the good out of them." It is during the warm dry weather of summer that the country requires diluted sewage, and during this period the engineer also requires a little extra water, to increase velocity and the momentum or force of the current, so as to hurry on all matter held in suspension to its final destination—the land—before decomposition takes place, as during the high temperature of this (the summer) season the affinity of animal and vegetable matter for the oxygen of the atmosphere is greatly increased, and chemical change in a corresponding manner, more rapidly induced than during the cold weather of winter.

In a work of experimental inquiry like that under consideration, a knowledge of the manurial loss at present sustained is nearly as necessary as the practical engineering and chemical data required to avoid this loss, and effect the greatest manurial economy of the sewage. In other words, we have to examine things as they are, and also as they should be. Thus, the engineer has first to construct a sewer on the most improved plan he can devise, so as to remove the sewage from the water-closet the greatest possible distance in the shortest period of time, in order to enable the chemist to ascertain by analyses the points where the more active decomposition of the sewage commences—that point which furnishes the data for determining the greatest distance the pumping station should be placed from the water-closet; and then he has to ascertain the loss at present sustained under the antiquated and unscientific system of sewerage now in operation, in order to remove opposition, and enlist the co-operation of the inhabitants in the execution of the work on sound principles: the former being ascertained, the latter will be the difference between it and the present system.

To prevent the solid excreta from the water-closet stagnating in the waste-water pipe that leads to the common street sewer, and in the sewer itself, there should be a sufficiency of water in the former to carry everything quickly to the latter from the water-closets and sinks; while in the latter—the common sewer—there ought to be a continuous flow of water, not only to prevent stagnation, but also to sweep along the sewer the solid and liquid matter from the water-closet before comparatively perfect solution and mechanical subdivision of insoluble matters take place; as the moment this is effected, and the materials that are thus held in solution and suspension begin to rise to the surface of the flowing sewage, oxygen is abstracted from the atmosphere, when the work of decomposition and the liberation of gaseous and volatile matter will rapidly take place.

To effect this, the house waste-water pipe should be either of lead or zinc, in one piece if possible, so as to avoid all roughness and consequent obstruction at joints, or of one enamelled cast metal or iron pipe. It should also have as much declivity as possible, and be in one straight line from the water-closet to the sewer, or of such a course horizontally as would not interfere with the removal of solid excreta; and it should enter the common or street-sewer at an angle not less than 45 degs. In form, the pipe should be elliptical, or egg-shaped, with the longer axis vertical, as such would carry off the solid excreta, paper, &c., &c., better than when it is of the ordinary circular shape.

Similar experiments might be made with the ordinary glazed earthenware pipes laid in the usual manner. None of the above kinds of piping exceed in point of merit the glazed stone ware, provided the joints could be so made as to present as smooth and even a surface to the flowing sewage as the intervening body of each pipe. Sufficient attention is not being paid to this at present, owing to the erroneous notion, already noticed, so generally entertained, that if stagnation is prevented, no loss is sustained; consequently the joints often resemble the steps of a stair, agitating the sewage similar to the agitation of water flowing over the ledge of a rock. Now, nothing can be more ruinous to the manurial preservation of the sewage, and its profitable application to land, than the agitation and churning process to which it is thus subjected at these joints; for, instead of preventing the speedy solution and subdivision of the excreta, and consequent rapid decomposition that follows, as required to prevent chemical action and change, it effects the very opposite, and consequently the greatest waste of the manurial elements of the sewage is experienced. We believe, however, that it is possible to produce smooth joints, so that the whole of the interior surface shall be uniform throughout, and also the flow of sewage, and that this would be effected were the loss now sustained once known, so as to stimulate improvement in the manufacture and laying of pipes. We repeat our conviction that if once the loss of manurial elements now sustained were ascertained by the commission suggested, and made known to the public who sustains this loss, no effort would be spared to secure smooth-bored pipes, and a uniform, even flow of the sewage; for it must ever be borne in mind that when the sewage is found to be wasted and worthless for agricultural purposes, by having been made to flow upon the rough agitating surface of the sewer, and not only rough but rotten, being full of decomposing matter, thus inducing, by inoculation and catalytic action, rapid chemical change, such a state of things is the sure evidence of a polluted atmosphere; while, on the contrary, a polluted atmosphere is tangible evidence of worthless sewage.

The street or common sewer should be of a similarly elliptical or egg-shaped form, the longer axis being vertical, while the interior surface should be smooth, and as even and uniform in declivity as possible. It should also have a continuous flow of water, sufficiently strong to carry forward all sorts of solid matter that may find their way into it from sinks, water-closets, stables, cow-houses, manufactories, &c., &c., thus effectually preventing stagnation of any kind. This is essentially necessary in any experimental inquiry relative to the most economical plan for the application of town sewage to land; for to allow stagnation to take place anywhere, and then to wash out the common-sewer every now-and-then by heavy "flushings," is about as effective a mode of wasting the manurial value of the sewage as can well be imagined.

Having once tested the efficacy of the best construction of sewers in preserving the manurial value of the sewage, then other experiments might be made with sewers of an inferior description, and even the present sewers, in order to ascertain the difference, and the saving of ammonia and other fertilising matter that would be effected by the adoption of the former, and what profit this saving would yield, after covering the extra outlay of capital incurred.

As in all similar cases, the distance the sewage can be conveyed during the first interval of time, or before solution, subdivision, and decomposition commence, will be directly as the velocity of the flowing sewage, and the velocity as the declivity, or fall, of the sewer. In some places a natural fall could easily be got of a greater length than the distance in question, for trying an experiment; but in the vast majority of our large towns there are low-lying, comparatively level districts, where such cannot be got: consequently, the engineer must have recourse to an artificial fall. In other words, to procure a fall, or declivity, of some twenty feet for the short distance in question that sewage will flow as above (and the fall should never be less than this), the sewer must be twenty feet deeper at the lower end than it is at the upper, where it receives the waste-water pipe from the water-closet. Now such a declivity can only be got by subdividing large towns into districts, and placing in each of these pumping apparatus for sending the sewage to the country; and by thus subdividing large towns, as the Metropolis, a fall of from twenty to thirty feet can be easily got, without any additional expense of steam-power, as the sewage can be raised this height to the pumps by the pressure of the atmosphere. In any experimental inquiry, therefore, advantage should be taken of desiderata of this kind, as there cannot be a doubt but the ultimatum of the solution of the sewage problem is the forcing of the sewage to the country from pumping-stations of this description, in metal pipes, so as to effect the greatest manurial economy of the sewage.

When so much land is being laid out for building purposes about this great Metropolis and other large towns, we see no difficulty in laying out experimental sewers, so that they could afterwards be adopted as the sewers of the districts through which they pass. This, from a pecuniary point of view, is a matter of no second-rate consideration; for Parliament could easily hand over such a sewer to the proprietors of the respective districts, on terms that would be highly advantageous to all parties, while such terms would reimburse to some extent the draught upon the public purse. It would even have a higher advantage than this; for, the sewer being constructed on the most improved principles, it would not only be beneficial so far as its own drainage-work extended, but the good effects which it would thus produce would also stimulate other proprietors of household property to adopt the most economical system of the day for the husbanding of their sewage, as, under proper management, it will cover all expenses, and something more.

SEWAGE-FARMING, IN THE LIGHT OF THE PRESENT AGE.

The only difference that ought to exist between sewage-farming and the liquid-manure systems of modern times arises from locality and the market-demand for the produce of the land. In many places on the continent of Europe, and in most parts of the Celestial Empire (China), where the sewage of houses, both in town and country, is husbanded on something approaching to economical principles, there is no difference between the two systems—or rather, perhaps, it would be more correct to say that two systems of manuring and cropping land do not exist. There, much of the solid manure of the farm, as also that procured from towns, is liquefied, and applied to the land in a semi-fluid state; and what cannot thus be applied is put upon the land in small quantities along with the liquid manure, or else ploughed, drilled, or dug-in for special crops. The farmer who would settle down on any farm, determined to follow out the exclusive application of sewage-manuring where he could adopt the mixed system, would be considered beside himself, let the locality of his farm be what it may. Here, on the contrary, with all our golden opportunities and a much higher degree of professional knowledge in cultivation, manuring, machinery, railway conveyance, market demand for our produce, and so forth, our manufacturing and commercial communities are proposing to apply their sewage to the land as our forefathers did in the days of yore, when they exported their corn, and even their butter and cheese, to a foreign market, and when steam had not yet ventured to do aught save bubble in the caldron, and occasionally kick up a row when a little water was, by thrifty house-dames, hastily put into the frying-pan. Such being the facts of the case, they form a timely subject for examination; let us, therefore, look at them in the light of the present day.

When the British capital and her suburban towns and villages, as Croydon, are proposing to apply, and even are already applying, their sewage to land on the old plan of gravitation, it does not say that they have attained to a much higher level in agricultural science than the most plodding of the old-school farmers in the provinces. When we think of the obloquy which the former, in their every-day conversation on rural affairs, cast upon the latter, as being the most obtuse sticklers to antiquated routine and obsolete practices, no apology is required for saying in this place that the inhabitants of the metropolis, and town's-people generally, would do well at the present time if they would cast the beam out of their own eye, before proceeding to take the mote so frequently out of the farmer's; for unquestionably the former are now falling fast behind the latter in the race of progress, as to the appli tion of science to useful purposes, such as the utilization their sewage, or, indeed, any other branch of productive in dustry for the general welfare of the community.

Improvement in the manuring of land with town sewage like all other improvements of the kind, a work of degrees; that the first step is the discovery of the short-comings of gravitation system, in order to mend them. Of these the lowing are the most deserving of special notice:

1. The first objection is the waste of manurial element be the sewage leaves town. This we have pointed out in previous papers on "Experimental Inquiry relative to Utilization of Town Sewage," and we shall only now refer reader to what was then said as to the enormous loss at sent sustained by towns—enormous because double or two —the ammonia and other fertilizing elements of the sew being wasted on the one hand, and the atmosphere being luted by the manurial properties thus lost on the other. Th is something remarkable in this, for the latter appears to inflicted, as it were, by the retributive hand of justice for prodigal mismanagement of the former. The questions health and wealth, it must ever be borne in mind, are ins ably connected in all branches of the great work of utili the sewage of towns; for where the manurial value of sewage of any town is sacrificed, the health of the inhabit of that town is also sacrificed; and where the manurial value converted into the most money or wealth, there the sanit welfare of the people is improved in the highest degree. Th *we repeat, merits special attention.*

2. The second shortcoming of the old gravitation system the waste of the sewage experienced after it reaches the supposing the land situated in the most favourable position application, viz., contiguous or close to the town, so that is no intervening sewer or open-channel conveyance, and sequently no loss sustained thereby. But when it reaches land and is distributed over the meadow in open channels, loss from surface-contact with the atmosphere is very great was formerly explained under the familiar illustration of rapidity with which flowing water in shallow channels puri itself. No doubt we shall be told of the golden rule of pediency. Granted, for the sake of the argument it advance But how often does this involve a "penny wise and pou foolish" economy? On the present occasion it is all bubble together, if we may so speak; for a more effective plan wasting the fertilizing elements of the sewage could scarc

be designed and carried into execution! Indeed, so prodigal is the waste that the practice may well be termed, by way of reproach, *the successful solution of the problem how most to waste the already wasted sewage of the town, and pollute the atmosphere of the district in which it is applied to land?*

3. The third source of loss has reference to drowning the land with diluted sewage when it is already saturated to the full, and even overflowing, with rain-water or melting snow; and applying concentrated sewage in dry weather, when the land is thirsty, and requiring an extra supply of water in the m of diluted sewage. In both seasons there is something abnormal to the wants of the grasses grown as to call for ctical censure; for, what could be more diametrically oped to the economy of manurial values or the production of olesome herbage as food for milch cows or any other kind live stock to which such objectionable feeding material may given, than the system of husbandry thus pursued? In g tracts of rainy weather in wet seasons, either the sewage t be allowed to flow over the land already saturated to such egree as completely to destroy its aëration and hence the lth of the grasses, which become red and badly coloured, cating a sickly abnormal state of health, or else it must be t-off and allowed to flow into the nearest ditch or river. the latter, the sewage is wholly lost; if the former, the up- is something worse, the atmosphere in soft and warm wea- becoming greatly polluted, and often highly pestilential, g rise to agues and much malaric sickness amongst the bitants. How can it possibly be otherwise under such a m? In warm, dry seasons, again, when the sewage is ntrated in the greatest degree, and is reduced to the t manurial value before it reaches the land, all the pro- al skill of the irrigator is taxed to the utmost in order it distributed over the meadows as rapidly and as evenly ible, which in practical language means wasting the rial elements of the sewage as fast and as much practica- Hence the stench that arises, and which may be felt in seasons at a distance, thus becoming the source of many ievous complaint to those that live in the neighbour- d. Questions to the contrary may no doubt be raised by s prejudiced in favour of their own doings, however anti- ed and out of date; but the bubbles amongst the grass the water stagnates, the smell of the gases being thus ved, and the colour, smell, and taste of the coarse rank age, speak to practical men in language that cannot be understood.

The unwholesome herbage just referred to is of itself a d objection to the old sewage system, that cannot be con- verted. From time immemorial the fact has been familiar the agriculturist and flockmaster that the herbage of water- dows is highly prejudicial to the health of sheep and even k cattle, producing a very inferior quality of beef and mut- for the shambles, and giving rise to hereditary disease in ding stock. Given to milch cows, less harm constitution- is produced; because, as is well known, cows and other als giving milk are able to work off in this secretion nox- matter, and thus avoid disease to which they would in- bly be subject were the crude and imperfectly elaborated tter in the juice of the etiolated and forced herbage taken her into the circulation. But then arises the question of soundness and wholesome character of the milk of milch when fed on such deleterious food, for people have ally been poisoned by drinking goat's-milk when the ani- had eaten poisonous plants. Again, ever since the days Hippocrates, the father of medicine, milch cows have been posely fed on various medicinal plants, and people in bad lth well physicked by drinking the milk of such animals; when we come to the more practical question of physicking inhabitants of the Metropolis and other large towns whole- with the milk of cows fed on the unwholesome herbage of old objectionable system of sewage farming, we come to an in the pharmaceutical branch of the subject, that cannot haps be so readily filled up to the satisfaction of some ther nervous citizens of the British capital and other places. doubt we shall be told by dairymen, as we often have been in Edinburgh and other places, that "milch cows are re- markably fond of sewage grasses," that they eat voraciously, give a corresponding abundant flow of milk. But the hilosophy of this is so plain and simple to those who under- professionally the science and practice of the matter, he who runs may read; for the diseased state of organism which such food gives rise is a species of obesity in the outset, and it is a well established fact that this disease is attended with a craving voracious appetite, especially when obese animals are fed on food that is deficient of much of the natural stimuli required by the various organs of the body. First, to inhale poison from an atmosphere polluted by the manurial elements of the sewage, and then to drink the unwholesome milk of cows from antiquated sewage systems—thus poisoning oneself a second time—evinces a degree of aberration that hardly has its parallel in the darkest corner of the country, pitch-dark as no doubt some corners are to this very day.

5. The fifth and last objection our space will permit us to notice on the present occasion, is the waste of the sewage during snowstorms, long periods of frosty weather, when it cannot be profitably applied to grass lands. No argument is required to show the want of economy which the old sewage system exemplifies in this respect. Sunday and Saturday, night and day, are alike to any gravitation system of distributing the sewage equally over the land. Either it must be applied on the Lord's-day or one-seventh part of the whole sewage is sacrificed. Again, for several weeks, and even months, during the winter season, the sewage is lost. When drawbacks of this kind are added together, the sum is sufficient to turn the pecuniary balance against the profitable investment of capital in any sewage-utilization project; for the enterprize must be something more than ordinarily profitable that would cover such an extravagant waste of its productive resources.

It will thus be seen that there is no lack of head-room in the march of improvement as regards a more profitable application of town sewage to land. If the medical maxim, "To find out the seat of the disease is to effect half the cure," be applicable, then the sewage malady is on a fair way of recovery; for we have seen that from the crown of the head to the sole of the foot the old gravitation system is in an abnormal state, there being no soundness at all in any of its members. Like the soldier's gun, it requires "a new stock, a new lock, and a new barrel," to be fit for active service. Even granting that the sewage were sent to the country where it can be profitably applied to land, without having sustained any previous loss, comparatively speaking, either in the collection to pumping stations or in being forced through iron pipes a distance of some twenty miles, we have then to entertain the very problematical question, *Is it fit for being distributed over the land in its normal condition?* or are we to view it only as forming raw materials of a very crude kind, that have to undergo various manufacturing processes, during which they would have to receive many manurial additions before the manure thus made could be economically used in the growth of wholesome food for cattle? Since different kinds of crops must be grown in order to provide natural and wholesome food for cattle, and since these require different kinds or qualities of manure, is it not therefore manifest that sewage will require to be treated on principles corresponding to the manurial function it has thus to perform—principles in some measure resembling those which a long experience has taught the Chinese and farmers of the continent to pursue?

From the foregoing data it is evident that town sewage can only be viewed by the professional agriculturists of the present day as consisting of certain animal, vegetable, and mineral substances, and that the normal combination which these form is subject to many manurial improvements corresponding to the progressive advances of modern husbandry, and that consequently suitable provision in any sewage-utilization project should be made for the manufacture of sewage into proper liquid or solid, or semi-solid manure, for whatever system of husbandry those who farm the sewage may find it most profitable to pursue. In an age of progressive science like the present it would be highly premature to expend large capitals in carrying out plans already antiquated, as it were, or expensive plans that made no provision for any subsequent improvement that might be discovered. Several things may safely be taken for granted by the capitalist. Thus, the sewage may safely be sent to the country, there to be manufactured, and to undergo whatever subsequent improvement may be discovered in processes of this kind. It may also be taken for granted that the greater proportion of it (the sewage) will be applied in a liquefied form, and that distribution to a certain extent will consequently be performed by hydrants, if not by the hose also. But beyond this we shall not speculate at present, farther than observe that guano, bones, and other manures may, according to existing circumstances, be often profitably added to sewage.

FACTS AND FIGURES FROM THE UNITED STATES.

At a period when the columns of our newspapers are handed over to the achievements of war, it may be agreeable to obtain a little relief from the painful recitals of battles by a glimpse at the achievements of peace.

The future of England and America are intimately bound up together. Some forecasters of the horoscope of nations suppose that as England must decrease, America must increase. It is not usual, they say, for the parent and the child to flourish together. The fulfilment of this prophecy may, or it may not, become the history of the next century; but it cannot be denied that the progress of the one state exerts a very powerful influence upon that of the other. This being so, we do well to acquaint ourselves with what is going on in the Western States, which are now passing through the doubtful and hazardous process of reconstruction.

Not long ago a party of enterprising men visited the States of America to form their own opinion of the resources of that country, and particularly to ascertain to what extent these resources had been diminished, endangered, or their development retarded by the exhausting war which had engaged the country since 1860. Of this party was Sir Samuel Morton Peto. This gentleman, falling-in with a variety of information relative to the present condition of the States not made public in this country, arranged it for publication on his return, and presented it to his countrymen. From this and other sources I intend to draw facts that will not answer to the description of some other facts mentioned by O'Connell: "Those that are new are not true; those that are true are not new"—but facts that are both new and true. It seems to me not a little paradoxical to speak of a false fact. A fact which is untrue loses its character of fact.

America—I speak, of course, of the Federal States—has, in consequence of the recent war, to prosecute all its operations under a heavy pressure of debt, like Great Britain. We have been in the habit of regarding the debt, which upon our own shoulders we consider light, as intolerably oppressive and crushing on the young shoulders of America. The statistics to which I have referred present us with a picture that represents this young athlete as fully competent to bear the pressure, and to pursue her way under it with comparative ease. Nay, she outstrips us in the matter; for, while we regard it as a meritorious and superhuman effort to make arrangements for ridding ourselves of a portion of our indebtedness during the next fifty years, the cry of the whole population of the States is to the effect that the debt "*must be paid*" in a period not exceeding thirty years. The debt entailed by the war of 1812 was discharged from the ordinary source of revenue, in a period of nineteen years, at a time when capital and population were both less equal to such an effort than they are at present. This debt is £600,000,000, and involves an annual interest of £25,000,000: the annual interest payable on our own being £26,000,000.

Since 1830, the population of the United States has increased nineteen millions, whilst that of our kingdom has increased less than six millions. This startling difference is due to immigration—a cause which does not appertain to any of the older European nations. Had it not been for this, the free white and coloured population of the United States would, at the present time, have numbered only 10,463,000, or one-third of the whole present population. Great Britain and Ireland have contributed most largely to this immigration. Our own emigration official returns show that within the years 1814 and 1860 no less than 4,244,727 persons emigrated to the United States and Canada. Of these, the United States officials claim to have received directly 2,759,874, or with those who came through Canada, about 3,250,000. Not only has America gained the advantage of this influx of population from us, as it might be supposed to our detriment, but it is observable that we have parted with these men and women just at a period of life when their labour would have been likely to tell in our favour as balanced against the expenses the nation had been at to sustain and train them up to the age of fifteen and twenty years. The records show that upwards of thirty per cent. of the whole were between fifteen and thirty years of age. Only ten per cent. were above forty, and only about eight per cent. under 5.

France (208,063), Prussia (60,432), China (41,443), West Indies (40,487), Switzerland (37,733), Holland (21,579), next to the United Kingdom, contributed in the greatest degree from the people to populate these flourishing States.

Not only did the emigrants carry with them their muscle and skill and knowledge, but money and goods to the value (as it is estimated on the other side of the Atlantic) of from £18 sterling to £40 each; so that, beyond the physical and intellectual gifts, America is the better by some £80,000,000 for this adult flesh-and-blood importation. Of these immigrants, by far the greatest part are classed as labourers, farmers, mechanics, and merchants. It will not be matter of surprise to learn that the Northern States have received 8 to 1 of the people so imported.

From the Report of the Commissioners of the Land Office (1860), I find that of the 3,250,000 square miles which constitute the territory of the United States, the public lands embrace an area of 2,265,625 square miles. Nearly one-third of this land has been surveyed (441,000,000 acres), and about 395,000,000 acres disposed of by sales and grants. "The lands are surveyed by the Government; divided into townships of six square miles; subdivided into sections, and these into quarter-sections of 160 acres each, which are set apart for homesteads. The system of 'squares,' by which every section and quarter-section is divided, by line running due north and south, east and west, precludes all disputes as to boundary and title. As the old surveys are filled up, new ones are made."

The term "homestead law" may be familiar to many readers who may not know its exact provisions. It is clearly the policy of the Government to put forth inducements to settlement. This law is in the nature of such an inducement. If the settler is the head of a family, or twenty-one years old, and intends to settle and become a citizen, he can receive substantially as a free gift a "homestead," consisting of a quarter-section of a square, or 160 acres of land. Each of his children reaching the age of 21 years receives the like gift.

It is no small advantage to the settler that he can accept this gift of the nation to its citizens in a locality chiefly settled by his own countrymen. This and other privileges, such as freedom from taxation, and from all coercion in matters of religious worship, &c., account for the rapid rise of such States as Minnesota, Wisconsin, Indiana, &c. It is also to this fact—that every man has something to defend, and that there is no such large class of paupers as we unfortunately possess hanging on the neck and arms of industry—that must be attributed the wonderful strength and elasticity that has been exhibited by the States during their four years' conflict. To the same fact, too, we must attribute the sudden termination put to the same war.

On scrutinizing the census returns of 1860, it is clear that the country is essentially agricultural. At that date more than one-third, or 3,000,000, were occupied in the tillage of the soil. Of these, 2,423,895 entered themselves as "farmers;" 795,679 as "farm-labourers." There were also 85,561 entered as planters. The merchants and clerks of the States number 300,000. More than 6,000,000 of the 8,200,000 heads of families can be so accounted for under the classification farmers, farm labourers, labourers, servants, carpenters, clerks, shoemakers, merchants, miners, blacksmiths, teachers, and tailors, as to show a very clear preponderance of agricultural over other employments in the States. Sir Morton estimates that fully seven-eighths of the entire population is engaged in agricultural pursuits, or in the various professions and trades materially dependent thereon.

He makes use of this fact to show the impolicy of laying high rates of import duties for the protection of native manufactures, respecting the importance and extent of which the people appear to entertain a strange mistake. He criticises the composition of the amount registered as the annual product of manufacturing industry in 1860. It seems that of this sum (£400,000,000) no less than £44,800,000 are directly chargeable to "flour and meal," which is not only accounted a product of national manufactures, but, after being reckoned as grain, is a second time valued in the form of flour and meal—not the cost of the additional process only, but the cost of the raw material superadded to the miller's charges. This is not an exceptional case it would seem; for Sir Morton shows that it is the same with wood, entered in the products as timber and "lumber," or sawn imber. The country is credited with wool, woollen oods, and clothing—the first or prime cost being reeated three times. The same with leather, spirits, beer, nd fisheries. By this species of computation, the merican is drawn into the belief that the manufactures f the United States are much vaster than they really are. he Protectionist points to the magnificent total (2,000 illion dollars per annum) under the head of manuctured products, and asks triumphantly whether intests of such importance are not worth favour and proction?

The manufactures of the States consist chiefly of agriltural implements and sewing machines; of cotton and oollen goods; of furniture, clocks, jewellery, and musical struments; and clothing, and boots and shoes—all of hich are increasing. The hands thus engaged number 05,826. Those engaged in mining number 147,750. otwithstanding that America has thus taken to furnish rself with many things she formerly obtained from us, r exports have increased from £5,283,020 in 1840 to 22,907,681 in 1860.

America is wonderful in her rapid growth. Nothing more remarkable than the rise of some of the great estern cities. Minnesota is one of the youngest States; t though she only entered the Union in 1858, and has ce then had to meet an invasion by Indian savages of e Sioux tribe, she sent 15,000 men to the war, and her incipal town, St. Paul, increased from 10,000 people in 60, to 17,000 in 1865. Wisconsin had a population 5,318 in 1830, in 1860 it had risen to 775,881; ile the town of Milwaukie, on Lake Michigan, has thin a few years risen from nothing to be a city of ,000 people, and "does the second largest corn and ur shipping trade of any city in America." Indiana has a town, Fort Wayne, almost unknown to fame. "Under my own eye," says Secretary M'Culloch, "as it were it became a city of nearly 20,000 people—a city full of vigour and enterprise—the second city of our State. Sir Morton Peto informs us that in Indiana, a free State, settled within 40 years—there are upwards of 1,000 cities, towns, and villages, of which more than 600 have a population exceeding 1,000 each. Cincinnati, which owes her prosperity mainly to her immense provision trade, stands on what within the memory of living man was a forest, but has now 250,000 people. Of the extraordinary advance of Chicago enough has already been said.

But perhaps this rapid growth does not show the wonderful resources and elastic power of America more than the slightness of the effects observable from the late four-years war. To this fact Sir Morton alludes in the following terms: "Although the civil war in the republic extended over so great a breadth of territory, and although more than a million of men were withdrawn from the producing classes for employment in military service, yet the yield of the great staples of agriculture continued to increase, and never were greater than in the last year of the war." I find this sentence at the heading of a chapter relating to agricultural development, which is full of interesting materials. The statement is fully supported by figures, which show that the cash value of the farms under actual cultivation in the United States in 1850 was £65,435,000, and £1,329,009,000 in 1860, being an increase of about 103 per cent. in ten years. Within the same period the price of land rose considerably.

Some allusion was made in a former communication to the desire on the part of the Americans that their country should be esteemed for its manufacturing powers, and it was shown that although these are undeniably great, they bear no comparison with the agricultural interests, and are not by many degrees so important as their figures would make us believe.

It seems to be no figure of speech when we say that America is the granary of Europe. In consulting the census returns of 1860 I discover that the area of the country is thus described:

Improved land in farms	163,110,720	acres.
Unimproved land enclosed in farms ...	244,101,818	„
Uncultivated territory, fertile and waste	1,466,996,862	„

Here we perceive the explanation of the elastic hope that pervades the people. It may be true that agriculture as a science or an art (which you please to term it) is inferior to that practised here; it may also be granted that labour is much dearer; but then not only does the climate enable the New England or the Southern farmer to grow wheat at much less per bushel than the farmer of England, "even," as Sir Morton adds, "if he paid no rent," the absence of tithes and poor rates, and some other burdens, makes a vast difference in favour of our cousins. Not only is there no pauperism, but pauperism is a long way off. There is room and inducement for every able-bodied man to work productively.

The farms in size are for the most part small. They vary from 20 to 100 acres chiefly. Not more than one-fifth of the whole number exceed 500 acres. The largest properties are held in the slave States. Between 1850 to 1860 the rapidity with which land came into cultivation was surprising. Illinois is a notable instance of this fact.

Pennsylvania stood at the head of the wheat-producing States in 1850, her produce being 15,000,000, whilst Illinois produced 9,500,000 bushels. In 1860 Illinois produced 23,000,000, or more than the States of Pennsylvania and New York put together.

The progress of the Western States in wheat production is seen in the following table, the amounts being in bushels:

	1850.	1860.
Illinois	9,414,575	23,837,023
Indiana	6,214,458	16,848,267
Wisconsin	4,286,131	15,657,458
Iowa	1,530,581	8,449,403
Michigan	4,925,889	8,336,368
California	17,228	5,928,470
Minnesota	1,401	2,186,993

Although within this decade the population of the Western States increased fifty per cent., the increase in the production of wheat was at a higher ratio. So great was this growth that the facilities of transport could not keep pace with it.

The Western farmer has been making high prices during the war. His receipts have been much better than they were previously, when he had to depend upon the deficiencies of the European harvests. Now he is more dependent upon the eastern and middle States, whose population ceases to be occupied in corn-growing. In some degree, this will recompense him for the loss of war prices, but not so much so as to render him indifferent to the prohibitive tariff now about to be levied upon foreign manufacture, for the benefit of a few manufacturers and traders, &c. No circumstance, probably, will make him more recusant than this; and if free-trade do not ensue, separation of the West from the East will; on the same ground that would have justified our manufacturing and artizan population in revolting against the laws which consigned them to starvation, for the special enrichment of the landed interest. The spirit of protection is not confined to the landowners and occupiers—each branch of trade and commerce would have a monopoly. The very vendor of cats'-meat would oblige the Legislature to restrict the number of barrows to supply his district; and if they could, the hairdressers would obtain penal enactments against all who had the temerity to wear their own hair, so that their gain might be the greater from the manufacture of wigs.

There appears to be some difference of opinion between Sir Morton Peto and the superintendent of the census of 1860 with respect to the powers of production possessed by the Western States. The latter authority, in his able papers upon the agriculture of the country, while discussing the question "Whether the Western States are capable of supplying the increased demand and growing deficiency of the New England and middle States, besides supplying the rapidly-increasing home demand, and have a surplus to export to foreign countries?" concludes that they cannot. Sir Morton, exercising his judgment upon the evidences brought before him, describes himself as being forced to take quite a different view. He regards the wheat-supply of the Western States as absolutely unlimited. Of course, this depends, in a great degree, upon whether it can be grown to a profit, which, after all, may resolve itself into the question of freight. If this only can be kept down by the increased facilities afforded, Sir Morton may be right, since the power of production is intimately related to the stimulus communicated, or the profit derivable from wheat-culture.

The shipment of wheat to Great Britain amounted, in 1859, to 295,248 bushels; in 1860, it rose to nearly 12,000,000 bushels; and in 1861 and 1862, to 20,061,000 bushels and 29,798,000 bushels respectively, falling, in 1863, to 16,000,000 bushels. This shows a supply of wheat amounting to 37½ per cent. of our whole import. At the same time, the imports of flour into Great Britain from the United States were 58.3 per cent. We have no onception of the enormous resources of this country.

The following official table shows the ratio of increase in the value of the grain exported from the United States for a period of forty years:—

Years.	Aggregate value of Exports of grain. Dollars.	Percentage of Increase.
1823 to 1833	67,842,211	—
1833 to 1843	73,303,440	8.0
1843 to 1853	198,594,871	170.9
1853 to 1863	512,380,514	158.0

From this is to be seen what a stimulus this trade received from the repeal of the corn laws.

Single years since 1846 show a greater aggregate trade than whole decades previously.

Britain produces about two-thirds the total amount of her consumption, and of this deficiency of one-third the United States supply her with about half.

This increase may be shown to be due to another cause likewise, which, though inaugurated in 1825, has taken some time to mature. Previous to that date the Mississippi was the only outlet to the ocean from the north-west. But in that year, the opening of a canal which placed the Hudson river in communication with Lake Erie brought the shores of the great lakes into communication with the Atlantic. "This grand avenue developed a new world to the pioneer, the agriculturist, and the merchant."

Another large field of cultivation was opened in 1848, by the construction of the Illinois and Michigan canal, and the formation of these canals were succeeded by ways of iron, which have completed the present facilities for the development of the country.

In the former part it was stated that the eight food producing States west of the Lakes embraced an area of 262,549,000 acres, of which only 52,000,000 acres were under cultivation in 1860, so that Sir Morton was fully justified in considering that ample scope remains for increased production. The only difficulty he sees exists in the possession of sufficient facilities of transport to meet the demand.

The following table illustrates the fact that the entire export of grain from the United States at the present time does not equal the total product of any single State in the Union.

Year.	Wheat Produced.	Wheat Exported.
1850	100,485,944	7,535,901
1860	173,104,924	17,213,133
	Ind. Corn Produced.	Ind. Corn Exported.
1850	592,071,104	6,595,093
1860	838,792,740	15,448,507

In the Exhibition of 1862, the principal prizes were taken off by Australian and American wheats. The fineness of quality was not the result of culture, but of sunshine, and in England the highest farming will not compensate for the absence of these favourable climatic conditions. The remark is true enough, but no less true that this variation of capabilities is designed by Providence to bring nations into harmonious co-operation by means of their dependence upon one another. F. R. S.

BUTTER.—The public pay more for foreign butter than perhaps many persons imagine—In 1854, the value of the butter imported into the United Kingdom was £3,171,19 in 1855, £2,049,522; in 1856, £2,635,182; in 1857 £2,061,280; in 1858, £1,842,855; in 1859, £2,060,143 in 1860, £4,078,017; in 1861, £4,902,394; in 1862 £4,923,100; in 1863, £4,537,157; in 1864, £5,652,704; and in 1865, £5,945,884. The English thus do not quarrel with their bread and butter, but take very kindly to it indeed.

OUR COAL, FOOD, AND POPULATION IN 1966.

"While other countries mostly subsist upon the annual and ceaseless income of the harvest, we are drawing more and more upon a capital which yields no annual interest, but once turned to light and heat and force, is gone for ever into space."—*Jevons*, p. 332.

"A farm, however far pushed, will under proper cultivation continue to yield for ever a constant crop. But in a mine there is no reproduction, and the produce, once pushed to the utmost, will soon begin to fail and sink towards zero.

"So far then as our wealth and progress depend upon the superior command of coal, we must not only stop, we must go back."—*Jevons*, p. 178.

SIR,—Since writing my last paper ("On our Coal, Food, and Population in 1966") I have been reading attentively Mr. Jevons' admirable book, which contains such a valuable, concise, but comprehensive summary of statistical facts bearing upon and arising out of our social and industrial condition, that I commend it for general perusal.

From that clear-headed writer I quote the paragraph that heads this paper. The more one reflects on the general condition of British agriculture as compared with our other industrial occupations, the more one is struck with the unfavourable contrast that it presents, and the public indifference regarding it. Year by year we become more and more dependent upon foreign imports of food; while, in an exactly opposite ratio, we are saturating the whole world with our other productions and manufactures. The causes of this unfortunate discrepancy are clear and obvious. In one case we employ an enormous increase of labour and capital, in the other a decrease of both; for I believe that very much capital is annually lost by our inefficient, and therefore unprofitable mode of farming and land holding.

In our agricultural counties population has almost stood still, and in some counties actually decreased during the last 10 years; whereas in the manufacturing counties the increase of population is for the same period 20 to 23 per cent., and in manufacturing towns 26 per cent. Our manufacturing population has more than quadrupled itself in 60 years; it has multiplied at a rate equivalent to doubling in 28 years. Now, it is quite clear that a proportionate investment of capital and enterprise must have also taken place, and that poor and inert agriculture has made little comparative progress. I admit that the introduction of machinery in agriculture may have displaced some portion of human labour, but that is but a small matter. In my own case, at Tiptree, with abundant machinery and steam power, the increase of labour has been 100 per cent., or from 22s. to 44s. per acre. If to this be added the extra labour used in the original improvements, such as removal of fences, drainage, improved roads, new buildings, digging tanks, burning earth, &c., the population, in connection with agriculture, must have concurrently and greatly increased, and it has done so hereabout.

The general, social, moral, and physical condition of the labourer has amended; our new village church and new dissenting chapel are filled by well dressed and orderly congregations: new cottages are erected, and the evidences of increased comfort as well as of increased population are various and unmistakable. The new village school is well attended by the juvenile labouring population. Can any body, then, deny the benefits thus resulting to the country at large from such investments of new capital in agriculture?

What has taken place in this respect of labour in my neighbourhood has likewise occurred in all other similar cases of agricultural improvements.

One great drawback to landowners is the difficulty of finding tenants who believe that a capital of £14 per acre will bring them a larger per-centage of profit on their capital than an acreable investment of half or one-third of that amount. The general farm capital of the United Kingdom being only £4 per acre, it follows that our amount of food production must be miserably insufficient.

The population of England and Wales was in 1570, 4,160,821; 1670, 5,773,646; 1701 to 1750, about 6,000,000; 1801, 9,192,810; 1831, 14,070,681; 1861, 20,281,587.

As we have about 60 millions of acres (landlords' measure) in the United Kingdom available for agriculture, importations of food were formerly unnecessary, and we were exporters of corn; but now all this is changed. Our acres do not multiply, so that our population, owing to the miserably low production from those acres, require and consume the produce of probably some 30,000,000 of foreign acres. In other words, three acres (landlords' measure) are required for each man, woman, and child in the United Kingdom. With high farming, where abundant capital and labour are employed, one acre per head of population would suffice. The average acreable produce of the kingdom may be taken at £3 12s. On some lands of average quality the produce is three times that amount—resulting from improvements effected by the landlord and tenants conjointly.

We must therefore conclude, that as compared with the enterprise of trade, commerce, and manufactures, agriculture is in a stagnant and non-progressive condition; that it neither employs sufficient capital or labour, and that consequently, in comparison with the other industrial occupations of the country, it is poor, penurious, and humble.

All this can only be remedied by a concentration of the present capital of landowners and farmers on a more limited area, and by much land passing into the hands of rich and enterprising purchasers and holders. The present landowners' capital I estimate at £1,500,000,000 (how much of this is on mortgage?); the farmers' capital, about £240,000,000. Both those amounts must be doubled or tripled ere we can satisfy abundantly and cheaply with our own produce John Bull's gastronomic requirements.

But where is the money to come from? I have not been able yet to ascertain the amount of our loans to foreign and needy potentates; but I fancy that the enormous total would go far towards accomplishing the objects I have indicated, to say nothing of our annual profits and accumulations, to the extent of probably near 100 millions.

I do hope that our agricultural friends will give up their prejudices in regard to statistics, and then we shall have no longer to guess at the probable acreage and agricultural position of the country. Farmers must prepare themselves for a rise in the price consequent upon the scarcity in the supply of labour. Labourers not only migrate to America and our colonies, but are attracted to our mines and manufactories by higher wages and a facility of communication and transit. Persons employed in agriculture are decreasing annually. In 1861, they only numbered 1,924,110; while in other occupations they have vastly increased. The extensive use of agricultural machinery in the United States of America is owing to the fact that the agricultural labourers always earned 4s. 2d. to 5s. per day, which, considering the low price of food there, was equal to 6s. or 7s. a-day in this country.

Dear labour here will compel farmers to adopt machinery far more extensively than at present, and they will come to my conclusion, viz.: "Never to use a man where a horse will do, and never use a horse where you can substitute steam-power."

Tiptree. J. J. MECHI.

THE EWE AND LAMB AT WEANING-TIME.

BY A PRACTICAL FARMER.

The weaning-time is always one of particular interest to every sheep-breeder, as both ewe and lamb have to be provided for, so that neither shall suffer damage. The ewe is liable to injury and loss of condition, in the first instance, if not carefully attended to, and proper keeping supplied to her. The worrit and restlessness upon the immediate loss of her lamb are very great—running here and there, bleating loudly and lamentably, and often refusing food. It is very desirable that the first separation should be a final one—*i. e.*, the ewe and lamb should be removed so far apart, if possible, as not to hear each other's bleating. If not, this restlessness is continued for a considerable time, and loss of condition in both is the result; but, if separated to the requisite distance, they will readily accommodate themselves to their mutual loss, and the lambs will soon commence a kindly grazing on their own account. The ewe is also liable to damage from her udder. The lamb ceasing to suck it, it will frequently become full, and require drawing, or it will soon be hard and inflamed, and often much suppuration takes place. These are matters for the shepherd's watchfulness.

The time for weaning will, in every flock, depend upon previous management, and the preparation or suitable provision that the farm will afford. It generally takes place in the month of July in most parts of the country. The grazing pasturage becomes old, and is too heavily stocked, owing to the growth of the lambs. The clovers and meadows have been mown sufficiently long to permit the eddishes to make head. It is then the flockmaster deems it right to provide better keeping for his lambs; and this leads to his weaning-time. Another cause for such a decision is the stoppage in the progress or well-doing of the lamb. Immediately after the ewe is shorn of her fleece, she improves in condition, and yields more and better milk. The lamb, of course, reaps the advantage; and, as he grows, he is continually teasing his dam and abstracting every drop of milk. This, again, tells upon the ewe. She begins to shrink, so that the breeder is fully satisfied that the time of separation, or weaning-time, has come.

There is more care and judgment required in weaning lambs than is generally given to it. It will not accord with good management to take the lambs from the ewes, and place them upon a luxuriant and quick or strong-growing pasturage, nor upon a young and fruitful eddish. Both will prove too purgative for them; and in wet seasons many will succumb to colic or diarrhœa. Neither will it do to put them upon strong bullock-pastures: here they will be liable to inflammatory attacks, from over-feeding or doing too well. The change from suckling to providing for themselves must not be a violent or very direct change; but they must be brought to it as gradually as possible. For this purpose it is very desirable to thin the stock upon the suckling-pastures previous to weaning, so that the grass or seeds can make a little advance; and when weaning-time arrives, I believe the best practice is to take the ewes away from the lambs, and leave them in the fields they have been accustomed to. The pasture will, in the absence of the ewes, soon improve; and as they have been habituated to the field and their wonted haunts therein, they rest more kindly, and the risk from a direct change of food is avoided. In these fields they should remain some three or four weeks, until the clover or grass-eddishes, or aftermaths, are sufficiently grown to receive them. Neither the grass-fields nor eddishes should at any time be in a too-luxuriant state. The clover-eddishes should be old enough to produce flowers before stocking, unless the season is very hot and dry; and the grass-eddishes should be three or four weeks old, otherwise looseness of body and scouring will affect the weak lambs, and the stronger ones will suffer such damage as to prevent satisfactory progress when put to winter-keeping. The great thing is to keep them thriving. For this purpose rich, young, and succulent food must be avoided, and sound, well-grown herbage must be provided. If this cannot be done, resort may be had to that salutary artificial food in such cases, "cotton-cake." This cake, if good and genuine, is found to be a good corrective, or rather alterative, in scouring animals. If the lambs are slow to eat it, let corn-meal of any kind be mixed with it, or oats or barley in limited quantity. As the season advances linseed cake may be more advantageously given: even such a small allowance as two ounces daily will promote their well doing, and as they grow it should be increased gradually to from four to six ounces, which will suffice for the winter. These are general remarks for the whole flock, but they will not apply for the weak and sickly lambs: they must be nicely nursed upon weaning, or great loss will result in the winter. A place suited to their low condition must be selected for them, and any nutritious keeping that can be found must be judiciously given them, and that in great variety—grass, tares, seeds, cabbage, corn, meal, and cake, but not in a wasteful way; they must be nursed well. If the lambs as a flock are well summered no great danger will arise from weaning, and they will soon be strong enough for their winter keeping, to which they should be put immediately the eddishes begin to fail, and not later than Old Michaelmas on any account. If they are not habituated to their winter keeping, *i. e.*, turnips or coleseed before the rime frosts set in, there is much danger, and even cold rainy weather at that season is very injurious; indeed, the change alone from grass, and aftermath or eddishes, is always attended with danger. The ewes will at weaning-time also require attention and care. They should be placed for a few days on the poorest pasture the farm will afford, and if without water for a day all the better; the object being to dry up their milk as soon as possible, in order that they may be prepared for better keeping. This is important, because if they are draughted on to good pasturage the milk is flushed, and many weeks will not suffice to dry it up. Very little artificial means are resorted to for this purpose; in obstinate cases of milk flushing, it may be right to bleed and give a dose or two of Epsom or Glaubers salts, or other alterative medicine, and the udder should be rubbed with some absorbent. It will frequently require drawing; and if it becomes hard, some soft emollient, *i. e.*, soft-soap, or hog's lard, may be well rubbed in. When the milk has subsided, the sooner they are put upon the best keeping that can be provided for them the better. It must be remembered that the time for putting them to the ram will soon arrive; and if they have not recovered their condition, and the animal secretions have not assumed their functions, a light fall of lambs may be confidently anticipated. They cannot be too well kept immediately prior to being put to the ram, if the food is natural, *i. e.*, grass, seeds, clovers, and the like, or early cabbage or coleseed: these are very conducive to effective gestation. The better they thrive at this season the greater success may be expected, their safety as breeders will be secured, and more and finer lambs will be the result. It is great folly for breeders to permit their ewe flock to ramble about in stubble fields, or any over-eaten eddish or pasture at this time: rather let every provision be made for their safe progress, even to the cultivation of late artificial grasses, or especial crops of green food for this purpose, *i. e.*, plots of late-sown tares, or of early cabbage, or coleseed, for additional aids on their pastures. The great mistake made by many breeders is the supposition that the ewe flock will for the most part take care of itself; that it may forage about wherever a stray blade of grass may be found; that, in fact, it must shift for itself, providing room is found for it upon the farm. If any animals suffer, it must be "the old ewes." This is wrong; I commend, therefore, my imperfect remarks upon this point to the careful consideration of breeders, confidently assuring them that the better the care taken of the ewe flock, the better will every breeder be repaid.

THE EWE AND LAMB AT WEANING-TIME.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In looking over the columns of your valuable paper of this week, the owner of a flock would very naturally rest his eye on the article written by a "Practical Farmer" on the ewe and lamb at weaning-time. Such was my case; and, whilst admitting the many and valuable suggestions made therein for the welfare of the flock at this critical period of the year, yet I take very strong objection to one part of it, as I am convinced, as far as practical experience goes, it is directly opposed to good and safe management. I allude to that part where the writer says, "The change from suckling to providing for themselves must not be a violent or very direct change, but they must be brought to it as gradually as possible: for this purpose it is very desirable to thin the stock upon the suckling pastures previous to weaning, so that the grass or seeds can make a little advance, and when weaning-time arrives, I believe the best practice is to take the ewes away from the lambs and leave them in the fields they have been accustomed to. The pasture will, in the absence of the ewes, soon improve, and as they have been habituated to the field, and their wonted haunts therein, they rest most kindly, and a risk from a direct change of food is avoided. In the fields they should remain some three or four weeks," &c.

Now, I hold that a lamb, after weaning, should never be suffered to graze on over-eaten seeds or grass—not even for a few hours—as most certainly, if it does (in the majority of seasons, as instance last year, when many in this district lost the greater number of their lambs), you have that most fearful and most deadly disease called "scour in lambs." This I alluded to in my letter of March 26, 1862, as given in your columns, and afterwards in the "Farmer's Magazine" for May in the same year. This was, however, afterwards more fully brought out in Dr. Crisp's very valuable paper on the "Lamb disease, as given in the "Journal" of the Bath and West of England Society, vol. xi. part 1. If you permit me I will make a few suggestions as to the management of the lamb flock after weaning. Let them go on to clover or grass eddishes, young tares, or even on grass where bullocks have been grazed, *and no sheep*. And it is a capital plan to have a few early cabbages to throw amongst them; this will generally keep them on till you have stubble-fields clear, young clovers to run over, if only sparingly—all these will be quite safe; letting them have as frequent *change* as possible, a good lump of rock-salt to run to, *good* water, *pure* linseed-cake. If it is sought to push them on for fat hoggs in the following spring, or even for stores, 0¼lb. of cake will be an advantage, but it is not altogether necessary. By the time stubbles are run over, and eddishes lost bloom, the farmer will generally have turnips ready to stock, and then the risk as to the parasite disease is over.

I know you will pardon my taking up this matter, it being most important to us now, sheep being the most paying kind of stock we have, and I believe, taking the period of a farmer's life, would be found so.

Whether our "early maturity" system, both for sheep and beast, is best, I leave with others, having my own ideas on the subject; but I fancy, if we kept our stock to be full-mouthed, as I believe was ordained, we should hear less complaint about "worn-out pastures."—Believe me to be, sir, yours very faithfully,

WILLINGHAM FOWLER.

Manton, near Uppingham.

PEAT AS A MANURE—VALUE OF HUMUS.

The following paper on the "Presence and Source of Nitrogen in Peat, with Reference to its Use as Manure," was read at the recent Botanical Congress at London, by Professor Schulz Schulzenstein, Berlin:—

"Ingenhauss, Saussure, Boussingault, and others, have all one and the same theory as far as regards the nutrition of plants, viz., that the carbon and nitrogen originate from the air, and not from the soil, and that therefore the vegetable and animal ingredients of the soil are not to be considered the food of plants, but that the mould of the soil is derived from the plants themselves, and cannot serve them hereafter as food. But notwithstanding this theory, experiments in horticulture and agriculture have shown that one can never do without carbonaceous manure, taken either from the vegetable or animal kingdom; and experience proves that carbon plays the principal part in earthy manures; that without mould, there is no plant-growing, as far as all artificial mixtures of the soil are based upon earthy substances; and that mineral manure without mould is a chimera. Orchid-growers know now very well that, deprived of mould (humus), their plants will not succeed for any length of time.

"We have it in our power to change, to improve, or to deteriorate the different kinds of fruit—nay, the products of the vegetable kingdom altogether, in manuring the soil with different humus-substances, without the air interfering in the slightest degree, simply because the different fertility depends upon the soil and locality. The air appears to be the same everywhere; and we could not speak of a local difference in the vegetation if the air furnished the food for plants. Practical experience contradicts the theory of Ingenhauss, Saussure, Liebig, &c. All cultivation amounts practically to this—to avail ourselves of the humus-substances of the soil, or to improve them. And in this way we prepare peat as manure. The easier peat decomposes, the better it acts on the vegetation; and those cheap kinds which are very light and spongy, and are not fit for burning, are especially to be recommended for manuring the soil, which is rendered more absorbent of the humidity of the air, and by-and-bye the whole mass of the turf is decomposed by putrefaction. The lighter and more spongy the turf is, the quicker will be the results. All turf is more or less ammoniacal or nitrogenous; and the stronger it smells in burning the richer it is in nitrogen, and the more fit, therefore, is it to be used as manure for corn or garden plants. Owing to the quantity of nitrogen that the peat contains, animal manure is rendered more or less needless; and we ought, therefore, to use it always in the cultivation of those plants for which any animal substances are unsuitable.

"But what is the source of nitrogen in turf? The general opinion is that carburetted hydrogen gas is formed, of which the hydrogen unites itself with the nitrogen of the air so as to form ammonia. This, however is contradicted by the nitrogen not being present in the turf itself in the form of ammonia, which is only formed by the dry distillation of the turf, just in the same way as it originates through the dry distillation of animal substances. This shows that the nitrogen in the turf must be in the same condition as it is in animal substances, as for instance in horn, bones, albumen, and meat. In fact, it can be proved that the nitrogen of the turf really originates from animal bodies which live or have lived therein, and of which traces are to be found in the turf. The classes of infusoria, polypes, worms, mollusca, crustacea and insects are best represented, which through their bulky development produce the nitrogen in turf-pits and turf itself.

"Turf manure does not act so quickly as stable manure, because it decomposes more slowly, but it thereby becomes more efficacious.

"Liebig affirms that turf can only be considered as a manure for plants if phosphate of lime be mixed up with it. But as turf contains in itself a sufficient quantity of this substance, I need hardly say that Liebig's opinion cannot be upheld in practice. My experiments in adding bonedust to the turf have not given any better results than by using turf alone.

"Manuring with humus in general, and manuring with turf and decayed vegetable substances in particular, show irrefutably that the food of plants forms a simple substance, which is represented in the gases of humus—carbon, hydrogen, and nitrogen—and that the plant does not need to procure the carbon and nitrogen from different sources, and to compose only the food out of the elementary substances."

GREEN MANURING—CLOVER HAY.

Green manuring, or the growing of some vegetable crop and ploughing it down while in a green state, is by some thought to be the most economical way of manuring or improving the soil: that it will benefit a succeeding crop every one who has properly tried it will testify in the affirmative. This practice of ploughing down green crops is of ancient origin, it having been practised by the ancient Romans, if not by other nations even in earlier days. Since, it has been practised by all enlightened agricultural nations to a greater or less extent. By means of ploughing-under such green crops as clover, corn, rye, buckwheat, &c., the poorest soil where seed can be induced to sprout and grow may be gradually converted into a most fertile one.

Of all the crops grown for the purpose of improving the soil, perhaps there is none equal to red clover. The rank spreading foliage effectually shades the ground, and draws a large portion of its pabulum from the air; the long heavy roots reach well into the ground, loosening and dividing a close soil, permitting the action of the air and elements still farther to reduce the sterility. An advantage of clover over other green crops is in the fact that a crop may be saved for feed by cutting in June or early in July, and the aftermath, with the roots turned under to decay, are found equal to the effect produced by ploughing down the first crop; thus we have the very best of hay for feeding purposes and making manure, as well as all the advantage to be derived from the other course.

The non-success of a large class of farmers in properly curing and saving clover hay, has given it the disrepute with which it is held in the estimation of that class, as well as others. When cut at the proper time, which is when the heads begin to turn brown, and properly cured and stored, without losing the leaves, it furnishes the best kind of hay for stock, and the richest manure with which to supply future crops with the necessary elements to a vigorous growth.

I cannot refrain here from further digressing, to give my mode and ideas of how clover hay should be made. Mow as soon in the morning as dry from dew, and here I prefer the old scythe and swathe, as there is less handling to waste the leaves. Let it lie two or three hours, and turn the swathes bottom up. About 4 or 5 o'clock pitch the clover into small loose cocks; let them remain till between 11 and 12 o'clock the next day, when they are divided, loosened, and turned bottom up without shaking. About 4 p.m. haul to the barn and place on a scaffold. If the quantity be large, it would be best to have two mows to receive the same. We thus dry out the watery portion, leaving the juices in the proper state diffused throughout the hay. Clover put up in this way, without being wet, will come out bright, sweet, and without smoke. Cows will eat it and gain largely in milk: other stock will fatten upon it faster than with common hay accompanied with meal.

Wheat or corn grown to follow clover turned under is generally more free from disease, worms, &c., and yields larger and better crops than when an ordinary application of animal manure is made for such crops. Very little labour is required in getting in a crop of clover; no farther care, and will last two years, and, with proper management, often much longer.

There is no crop grown which is so greatly improved by the application of gypsum as clover. A small application will increase the growth, giving a heavy coat of green material to turn under. It is therefore economy to make an application of a bushel or so per acre to a crop designed for manurial purposes.

It is not my design in this article to go minutely into the management or preparation for and growing crops designed especially for ploughing down, but to make some general observations on the subject of green manuring, benefits to be derived therefrom, &c.

The benefits derivable are numerous and great. In the first place it restores all the mineral or other ingredients drawn or absorbed from the soil in the growth of such plants back to the soil; it also restores to the soil all the fertilizing gases that those plants have absorbed or derived from the atmosphere. It is an established fact that plants by their leaves absorb from the air oxygen, hydrogen, nitrogen, carbonic acid, phosphoric acid, sulphuric acid, chlorine, &c.; while through the roots or spongioles they suck up from the soil lime, alumina, magnesia, potash, soda, sulphur, oxides, &c.; these are all, or nearly all, returned to the soil in ploughing them down at the proper time—that time, chemistry would teach us, is when the plant has arrived at the proper stage, containing all those elements in the greatest abundance, before having arrived at perfect maturity, as, in such case, the land is robbed of a portion of the nutriment with which it is designed to supply it. The most proper time for ploughing, without doubt, is as soon as the crop is in blossom, as then it is supposed to have attained to the greatest perfection all the elements of its growth. The ground should lie a week or two previous to the crop following being put in, to give time for the escape of some of the gases generated in the decomposition. Warm weather is essential when the work is performed, that the fermentation may go forward to the early rotting of the crop. Warm and moist weather will forward the decomposition, provided there is a suitable mass to decompose rapidly.

In seeding for green manurial purposes, the quantity of seed should be liberal, or the object sought for is not obtained; the crop therefore should be dense and close, and a foot or more high, when ploughed under. When ready for the plough, it should be rolled, while the dew is on, with a heavy roller in the direction the furrows are to run; this mass should be thoroughly covered. As my ideas of good ploughing were expressed in a former communication, no further directions are necessary, except to say that to obtain the greatest immediate advantage from a green crop ploughed down, it should be covered only three or four inches deep—just deep enough to prevent wastage, and, at the same time, near enough the surface to be acted upon by the air and solar heat. A deeper covering will not give the following crop timely and regular nourishment; the effects are only obtained after further ploughing.

Very much might be said further why green manuring is beneficial, and how it is so; but the limits of this article forbid going into the subject further. I might adduce what is mentioned upon this subject by agricultural writers, both of Europe as well as of America; but will close this somewhat rambling article by referring to the names of such writers as Chaptal of France, Sir H. Davy, Professor Johnston and Way of England, Judge Buel, R. L. Allen, Dr. Daniel Lee, with a host of other writers, of the United States.—Wm. H. White in *American Country Gentleman*.

ON PLOUGHING AND POTATOES.

One of the most striking of those contrasts which arrest the attention of an intelligent agricultural observer, between the tillage of English fields and those of New England, as well as of America generally, is in the matter of ploughing. In England bad ploughing is rare; in New England good ploughing is even rarer. Something is to be allowed, of course, for the irregular and rocky surface of new lands; but even upon the best meadow-bottoms along our river-courses, a clean straight furrow, well turned, so as to offer the largest possible amount of friable mould for a seed-bed, is a sight so unusual that in a month of spring travel we might count the number on our fingers. I go still further, and say—though doubtless offending the patriotic susceptibilities of a great many—that not one American farmer in twenty knows what really good ploughing is. Over and over the wiseacres at the county fairs give their first premiums to the man who by a little deft handling of the plough can turn a flat furrow, and who wins honours by his capacity to hide every vestige of the stubble and to leave an utterly level surface. But a flat furrow, with ordinary implements, involves a broad cut, and a consequent diminution of depth. The perfection of ploughing upon sward-land implies, on the contrary, little pyramidal ridgelets of mould, running, like an arrow's flight, the full length of the field; all which a good cross-harrowing will break down into fine and even tilth, like a garden-bed. Yet again and again I have seen such ploughing, by Scotch adepts, condemned by the county wise men for its unevenness. The flat furrow is not indeed without its uses under certain conditions of the land, and with special objects in view—as, for instance, where, by a fall ploughing, one wishes a partial disintegration of the turf, in view of a "turning under" of the whole surface upon the succeeding spring for a crop of roots. This is practised upon the island of Jersey (so famous for its dairy stock) with great success. The sod is "skimmed" (such is their erm) in the month of November or December; and with the pening of spring all is turned under by a plough, which, so far s I have observed, is peculiar to that island, and which works n inches in depth and requires a team of four horses for its fective use.

I must have a word or two to say here in regard to Amecan ploughs, which, from the fact that they have received ecasional commendatory prizes from foreign committees, have een counted by the sanguine superior to all other implements f the name; and gushing orators have lavished brilliant riods upon our superiority to the world in this branch of gricultural mechanism. Nothing surely can exceed the best merican ploughs in their adaptation to present American eeds. They are light, compact, strong, and, in rough lands, e by half more manageable than the best English implements. But supposing a great reach of well-tilled and perctly cleared field, and the improved iron Scotch plough will y a far more true and even furrow with one-half the expenditure of manual force. Under such circumstances, the eat weight of the Scotch implement, added to its carefullyjusted poise, counts in its favour. We shall gain nothing denying this, and by exaggerating the value of our wooden amework, which has been suggested at once by the cheapss of timber material and by the exigencies of a rough untry. Nor have I any matter of doubt that as our culture pens into seizure of all economic methods, our implementakers will adapt themselves to the new demands with that rewdness which has thus far been so characteristic of their forts.

Another noticeable feature in European field management, hich contrasts it strongly with much of our helter-skelter anting, is the almost universal adoption of the drill system the culture of all hoed crops, by virtue of which fertilising material is applied directly to the plants, and the same distributed—by a transverse ploughing the succeeding season—for the benefit of the cereal which comes next in rotation. It may be questionable if our corn crop (maize) will not succeed best under so-called "hill" culture, and with a broadcast application of manure, since it is a gross and wide feeder, and demands full flow of sun and air; but in respect to most other hoed crops, there can be no doubt of the superior economy, as well as the more orderly appearance of the drill system.

Take, for instance, our ordinary crop of potatoes (and I think the details of its management were never before a subject of discussion in a popular magazine), four out of ten patches of this worthy esculent are, in New England soil, put down in wavy lines of hills—irregular in distance, slatternly in culture, and yet involving per bushel a far larger expense for tillage and harvesting, than if dressed, planted, cleaned, and earthed up according to some system which would demand trim lines, even distances, and a complete shading of the whole ground in the season of their most rampant growth. Perhaps I shall not be counted too intolerably practical, if I indicate the actual method of procedure which has been sometimes followed under my own observation. We will suppose that a good surface of sward-land (requiring a lift by reason of its weediness) is turned over lightly (and flatly, if you please,) in the month of October. Nothing offers better pabulum for potatoes, or indeed almost any crop, than decaying turf. In April the raw surface is levelled with a Scotch harrow, and thereupon all is turned under seven inches by the best plough at command with three horses abreast (two will weary of the work). After this the harrow is put on again, up and down and across. There is no fear of harrowing too much. This being accomplished, and the manure disposed (since March) in huge heaps at either end of the field, three deep furrows are opened at, say, two or three rods apart, by a ploughman who can drive his furrow across as straight as the flight of an arrow. Immediately upon the opening of the first, the cart follows, and two men strew the opened furrow with the half-rotted manure. Another hand follows with a sprinkling of guano and plaster; and still another follows to drop the seed. Upon this the ploughman laps a furrow in way of cover; two furrows follow as in ordinary ploughing, and every fourth one is treated as we have described with ample dressing and seed. Three series of furrows being opened at the start, permit the ploughman to go his rounds without interfering with the planting and dressing. When the whole field is gone over after this system it has simply the appearance of a thoroughly ploughed surface. Nothing more is done until the young shoots begin to appear; at this time the Scotch harrow is put on, and the land completely weeded and levelled, little or no harm being done by this procedure to the starting crop. The whole field has thus the evenness and the cleanness of a garden. Three weeks later, especially if the season be favourable to weed growth, it may be necessary to go between the rows—now most distinctly and luxuriantly marked with tufts of green—with the cultivator; and no further culture is needed until the "earthing-up" process is accomplished with a double-mouldboard plough. This done, the crop takes care of itself until harvesting time, no hand hoe or further culture being essential. I venture to say that the cost per bushel is twenty per cent. less than that by the ordinary, hap-hazard, hand tillage. In addition to this there is the delight to the eye of trim rows of luxuriant foliage, interlacing by degrees, and covering the whole surface with a rich mat of green. If the experts in the growth of this old esculent—whether in Maine or on the Bergen flats—have any fault to find with the method, we will be patient listeners.—Mr. Mitchell in *Hours at Home.*

CAMBRIDGESHIRE AND ISLE OF ELY AGRICULTURAL SOCIETY.

MEETING AT CAMBRIDGE.

Friday, Sept. 7, was fixed for the holding of the exhibition, and in the early portion of the day, although rain did not actually fall, it looked very threatening. The show took place in a large and suitable field lent by Mr. T. Sayle, situated on the Hill's-road, and within a few minutes' walk of the railway station. On the whole the horse department formed the principal feature of the show; but this section is not remarkable for any extraordinary excellence. The sheep were a very meagre supply, owing to the new Orders of Privy Council, dated 8th August, preventing the farmers in Huntingdonshire bringing their animals for exhibition; while the quality of the animals did not come up to what might have been expected. There was a small supply of pigs, among which there were some first-rate boars, and one immense sow. There was a large show of implements of all kinds, Messrs. E. Headly and Son, of Cambridge, having the largest collection. The next largest number was displayed by Mr. Swann Hurrell (the Mayor of Cambridge). Other exhibitors were Messrs. H. and J. Cutlock, Ely; E. and H. T. Turner, Ipswich; Woods and Cocksedge, Stowmarket; W. P. Wilkins, Ipswich; Chas. Burrell, Thetford; J. W. Brandford, March; G. Cheavin, Boston; J. Armitage, Chatteris; R. Maynard, Whittlesford; J. Pigott, Cambridge; A. and W. Eddington, Chelmsford; J. and S. Rawlins, Melbourn; T. P. Hitchcock, Bury St. Edmunds; and E. Page and Co., Bedford. The judges were: of CART HORSES, Messrs. J. Plowright, and G. Bedford; of NAG HORSES, Messrs. H. Boulton and T. Percival; of SHEEP, Messrs. W. Looker and W. Ladds; of SHORTWOOL and CROSS-BRED SHEEP, Messrs. H. Woods and H. W. Beaford; of SWINE, Mr. W. Looker and Mr. W. Ladds; of POULTRY, Mr. J. Monsey.

PRIZES.

HORSES FOR AGRICULTURAL PURPOSES.

For the best stallion, having served not less than 20 mares in any part of the county or isle during the last season.—First prize £10, Mr. E. J. Clayden, Linton; second £5, Mr. F. W. Lilley, Grantchester.

For the best entire two-year-old colt.—First prize £6; Messrs. T. and S. Fyson, Warboys; second £3, Mr. James Bailey, Wilburton.

For the best cart mare, not under four years old.—First prize £5, Mr. T. Gunnell, Milton; second £3, Mr. W. Baker, Stapleford.

For the best mare, with her foal.—First prize £6 and second £3, Mr. J. Warth, Sutton. Highly commended, Mr. G. Vipan, Stretham.

For the best three-year-old filly.—Second prize £2, Mr. S. Clayden, Little Linton.

For the best two-year-old filly.—First prize £4, Mr. John Triplow, Chatteris; second £2, Mr. John Bell, Whaddon.

For the best plough team.—First prize £4, Mr. John Linton, Westwick Hall.

For the best pair of dray horses.—Prize £4, Mr. J. Warth, Sutton.

For the best mare or gelding of any age, open to all England.—Prize £5, Mr. J. Warth, Sutton.

For the best three-year-old cart gelding, open to all England.—Prize £5, Mr. C. Mainprice, Ely.

For the best van horse, mare, or gelding, not exceeding seven years old, open to all England.—Prize £5, Mr. W. Baker. Stapleford.

For the best dray horse, open to all England.—Prize £5, Mr. J. Warth, Sutton.

For the best Suffolk cart stallion, the owner undertaking to travel him in the Cambridge district next season, open to all England.—Prize £5, Mr. E. J. Clayden, Barham Hall, Linton.

For the best entire horse for agricultural purposes, open to all England, the proprietor being a member, or paying an entrance fee of one guinea.—Cup value £20, Messrs. T. and S. Fyson, Warboys.

RIDING AND COACHING HORSES.

For the best thoroughbred stallion.—Prize withheld.

For the best hackney stallion.—Prize £10, Mr. R. Joselyn, Ely.

For the best mare calculated to breed weight-carrying hunters.—First prize £5, Mr. H. Hurrell, Newton; second £3, Mr. H. Thurnall, Royston.

For the best mare or gelding, under five years old, adapted for hunting purposes.—First prize £5, Mr. W. Sisman, Buckworth; second £3, Mr. H. Jones, Littleport.

For the best hackney mare.—Prize £4, Mr. J. Warth, Sutton. Commended: Mr. J. Warth.

For the best three-year-old colt or filly, not under 14 hands.—Prize £4, Mr. D. Adams, Cambridge.

For the best hunter of any age, open to all England.—Prize £5, Mr. D. Adams, Cambridge.

For the best roadster of any age, open to all England.—Prize £5, Mr. John Warth, Sutton.

For the best hackney mare, with foal at foot, mare not under 15 hands, open to all England, prize £5, Mr. J. Warth, Sutton.

For the best cob mare or gelding, not exceeding 14 hands, open to all England.—Prize £5, Mr. R. Pate, Haddenham.

For the best pony mare or gelding, not exceeding 13 hands, open to all England.—Prize £3, Right Hon. Lord George Manners, M.P., Cheveley Park. Commended: Mr. R. Pratt, sen., Cambridge.

For the best charger, open to all England.—Prize £5, Mr. D. Adams, Cambridge.

For the best hunter of any age, the property of a subscriber.—Prize £5, Mr. D. Adams, Cambridge.

For the best hackney mare or gelding under six years old.—Prize £5, Mr. W. Sisman, Buckworth.

SHEEP.

For the best shearling Southdown ram.—First prize £6, and second £3, Lord Braybrooke, Audley End, Essex.

For the best shearling short-woolled ram, not Southdown.—First prize £6, and second £3, Mr. J. Giblin, Little Bardfield.

For the best pen of five shearling Southdown ewes.—First prize £6, Lord Braybrooke.

For the best pen of five shearling short-woolled ewes, not Southdown.—First prize £6, Mr. C. Bottom, Newmarket; second £3, General Hall, Weston Colville.

For the best pen of five Southdown ewe lambs.—First prize £4, and second, £2, Mr. J. Clayden, Littlebury. Commended: Lord Braybrooke.

For the best pen of five short-woolled ewe lambs, not Southdown.—First prize £4, Mr. P. Portway, Great Sampford, Essex; second £2, General Hall, Weston Colville, and General Hall commended.

For the best pen of five Southdown ram lambs.—First prize £4, Mr. J. Clayden, Littlebury; second £2, Lord Braybrooke.

For the best shearling Leicester or Lincoln ram.—First prize £6, and second £3, Mr. C. Hales, Bassingbourn.

For the best shearling long-woolled ram, not Leicester or Lincoln.—First prize £6, and second £3, Mr. J. Giblin, Little Bardfield.

For the best pen of five shearling Leicester or Lincoln ewes.—First prize £6, Mr. T. Gunnell, Milton; second £3, Captain Catlin, Elm.

For the best pen of five shearling long-woolled ewes, not Leicester or Lincoln.—First prize £6, Mr. J. Giblin, Little Bardfield.

For the best pen of five Leicester or Lincoln ewe lambs.—First prize Mr. T. Gunnell, Milton; second £2, Mr. E. Fordham, Odsey, Royston.

For the best pen of five long-woolled ewe lambs, not Leicester or Lincoln.—First prize £4, Mr. F. W. Lilley, Grantchester; second £2, Mr. W. Hurrell, Newton.

For the best pen of five Leicester or Lincoln ram lambs.—First prize £4, Mr. R. Holben, Barton; second £2, Mr. E. Fordham, Odsey, Royston.

For the best pen of five long-woolled ram lambs, not Leicester or Lincoln.—First prize £4, Mr. W. Hurrell, Newton.

For the best pen of three shearling short-woolled fat wethers.—First prize £8, and second £2, Lord Braybrooke; commended, Mr. F. Street, Harrowden House, Bedford.

For the best pen of three shearling long-woolled fat wethers. —First prize £3, Mr. F. Street, Harrowden House, Bedford; second Mr. T. Gunnell, Milton.

For the best pen of three shearling cross-bred fat wethers. —First prize £3, Mr. F. Street.

For the best long-woolled ram, open to all England.—Prize £5, Mr. T. Brown, Marham Hall, Downham; Mr. J. Giblin, commended; Captain Catlin, Elm, highly commended.

For the best short-woolled ram, open to all England.—Prize £5, Lord Braybrooke.

To the exhibitor, residing in the county or isle, of the best pen of ten ewe lambs, of any breed.—A cup, value £5 5s., Mr. T. Gunnell, Milton.

PIGS.

For the best boar, large breed.—First prize £3, Mr. S. Wal- Grantchester; second £1 10s., Mr. W. Hurrell, Newton.

For the best boar, small breed.—First prize £3, Mr. J. yden, Littlebury; second £1 10s., Mr. S. Jonas, Chrishall ange.

For the best sow in-pig, large breed.—First prize £3, Cap- Catlin, Elm; second £1 10s., Mr. J. F. Fetch, Cambridge.

or the best sow in-pig, small breed.—First prize £3, Mr. Thurnall, Royston; second £1 10s., Mr. S. Jonas, Chrishall ge.

the best pen of three sow pigs, not 6 months old, large —First prize £3, Mr. J. F. Fetch, Cambridge; second 10s., Mr. S. Peed, Cambridge.

or the best sow and pigs, large breed, open to all England. £3 10s., Mr. W. Hurrell, Newton.

EXTRA STOCK.

Riding and coach-horses.—Mr. G. S. Hall, highly commended.

THE DINNER

ok place in the large room at the Guildhall, at four o'clock, Earl of Hardwicke in the chair.

The EARL of HARDWICKE, in proposing the toast of evening, "Success to the Society," said they had met day under what he would venture to term adverse cir- stances. The managers of that Society had—very wisely, had no doubt they would think with him—determined to ld that meeting, despite the state of agricultural affairs, to vent any link in that chain of their proceedings that was ued from year to year from being broken, without any that they should have a magnificent show or a very large ndance. Under all the circumstances he thought they had y reason to be satisfied. It was true they had to regret the ence of many gentlemen of the county, and they had to re- also the total absence of any members of the University, as latter body were large landowners. The corporate bodies the University possessed a large proportion of the area of county of Cambridge—they were great landowners—so he ld be happy to see them associated with the Society, their interests were identical. One reason for the non- ndance of members of the University and others was that as the season when parties changed their habitations, and who had passed the greatest part of the year on their ds and in their houses sought a little change of climate at seaside to recruit their health. So, though September was ry good time for the Society to hold its meeting r one re- ct, it was not the time when they might expect a very large ndance of the general public. He would admitit was ne- ry to hold the show when the climate would admit of an -door exhibition. The chief affliction which had fallen on Society was that terrible disease that had deprived them of exhibition of horned stock, which would otherwise doubt- ss have been a most satisfactory one. It would be advisable state their position with regard to it now. In Great Britain —he said Great Britain, for Ireland had happily been exempt— in Great Britain the total number that had been attacked was 53,211; and the disease was so fatal, that of these 124,288 ied, 84,620 were killed, and 33,314 recovered; so that they were not left without hope that medical experience and practice might tend to prove that the disease is not incurable. The statement he had given left ten thousand unaccounted for. That was for the United Kingdom. They would doubtless like to know the state of affairs for the county of Cambridge. The total attacked in Cambridgeshire has been 7,874, of which 4,533 died, and 2,685 were killed, leaving only 162 unaccounted for. They would think their prospect was a pleasunt one when he told them, in addition, the state of the disease in the county of Cambridge last week. The number attacked was one, and in the column where any might be added the return was "none." Thus, as their President he was able to announce to them for the time being the extermination of this terrible disease, and of holding out to them great hopes that in coming years that society would exhibit great vitality, and would be the means of materially improving the condition of the county. There were no matters more interesting to discuss than those appertaining to such a society as that; but to do them justice required more intelligence and understanding, combined with more knowledge of the subject than he possessed, to enlighten their minds and to illustrate the facts. Those societies met from year to year, and little that was new was brought before the public. From year to year they followed in the same path. From time to time there was an alteration or improvement in machinery, in cèreal or root crops; but as they appeared to come in regular course they were not so much thought of as they ought to be. There was no other class of society that had such important objects as they were met for—to devise the means of raising for man the largest amount of good food. It was customary to extol our manufactures; and there were, doubtless, among manufacturers many who were princes in position; but he doubted much if their avocation tended nearly as much to promote the social welfare of man as that the members of that society were engaged in. How much they might learn by intercourse with one another at these societies was not always considered, nor was it reflected that it was only by rubbing together—man against man, intelligence against intelligence—that general improvement could be produced, or instruction given; for, after all, books only reproduced the thoughts that were broached at such societies. That was particularly the case with agriculture, whose writers were stimulated by such meetings as that. If the advantages of those societies were looked for, they would be found in the condition of agriculture now, and then, looking back at agricultural meetings and proceedings for the last hundred years, they would find that it was principally through those societies that such vast improvements had taken place. Let them look at the breed of cattle. Though he was willing to admit that a hundred years ago England possessed good cattle, yet they were only to be found in the hands of the wealthy. Let them look at their homesteads now, and he would ask if communication together had not tended to raise their breed of cattle to a pitch of which they were only made alive to the value by the last dreadful visitation? It had been said that they should give up growing corn, and grow only cattle; that corn did not, and that cattle were their only product that fetched the proper price. But the smiting hand of Providence had shown them how futile it was to think that they could only produce one sort, and that they were not to produce on the soil all that God Almighty had rendered it fit to bear. The showground was the place where they would receive the most instruction, and the dinner table the most amusement; and these societies held out an opportunity of meeting in social intercourse, which was rendered important from the union and good fellowship prevailing, and showing that one of the strongest pillars of the constitution was upheld by the farmer. They might go to the showground for a lesson: they might, for instance, ask with regard to the valuable roots exhibited, their course of culture and the manure used. It was not in dining together that the real value of the society consisted: it was in the showyard where they could see and talk over how to turn to the best advantage the culture of our land. He might enter into details, if he was not surrounded by men better able to enlighten than he the farmer on the culture and improvement of his land. But there were some few things that the farmer did not always perhaps think of, and of which, if he did, he took a wrong view. They might consult the naturalist with advantage on a subject which seemed to have made a deep impression on the minds of some farmers, and certainly had upon his. He had heard it said, "Oh, look at those sparrows destroying that barley crop!" and that had led him, and others might be led with advantage, to consult the naturalist as to bird destruction, and to get a list of the birds that lived peculiarly on insects. There was no avocation that more tended to turn the mind of man toward the works of his Creator than farming, if it was taken up in a serious and scientific way. Some of those little birds they were so anxious to destroy did not touch a grain of their corn, and were their best guardians against innumerable insects who would destroy every atom of grain. There was another thing not much thought of, but of a totally different kind. He did not speak to eminent farmers, but what he might venture to call the hard-working and slaving farmer, who had no time to cultivate the science or chemistry of his profession, but who worked on practically. He had observed very much the thoughtless manner in which straw was consumed. He was sure they would agree that there was no article they possessed so valuable to land as straw; for that was the part which God had ordained should go back to the land to fit it to render future crops. Near towns, it was true, it was beautifully drawn out and sold; but elsewhere it was considered of little or no value, and the farmer thought nothing of destroying the very article that should go back to the land to enable it to again bring forth its increase. There was one more subject of great importance, and he would state at the outset that this was not a farmers' but a landlords' question. There was no subject more worthy the consideration of those societies than the condition of the cottages of the labourer. He relieved the tenant-farmer wholly of any responsibility on that score. It was a subject entirely for owners, but it was of such importance that it must be pressed upon public opinion, and, through that, upon individuals. It might be said that in one way it did not affect the farmer, but in another it affected him beyond measure. It was said, and said consistently with truth, that building cottages was no good investment of capital, as the rent did not make a return equivalent to the money expended. If they looked for a return for the money paid down he would admit it, but there was a return got from lodging a labourer in a healthy house with a foundation of concrete, and airy bedrooms, so that he might live dry and inhale a healthy atmosphere. What the farmer wanted was a man who could do a good day's work—strong men—who could do their work with good temper; and how was that to be if they did not live dry and have fresh air? If they did not, they would dwindle down to the pigmy-looking creatures they saw in manufacturing towns, and become almost as useless on a farm as if they were not present there. So societies such as that should press upon public opinion the necessity of having good cottages for the labourer. They might institute some prize, small in intrinsic value, perhaps, but which might be bestowed as a mark of honour on, and would be so esteemed by, those proprietors whose cottages were in the best condition, with some encouragement to the occupants to keep them so. The late Duke of Northumberland had received the blue ribbon of the Garter from Her Majesty for his exertions in the maintenance of the efficiency of the fleet of England; but he was not more worthy of it on that account than for his exertions with regard to the cottages on his estate. The fleet could only be recruited from the sturdy sons of the soil, and these could not be produced except in healthy dwellings. His lordship, after some allusions of a local character, resumed his seat amid loud cheers.

MR. HENLEY AT THAME.—THE LABOURER'S COTAGE.

At the Thame Agricultural Society's meeting Mr. **HENLEY** said he could hardly help touching upon a matter to which reference had been made, viz., the dwellings of our agricultural labourers. Now he did not believe they were the class that were the worst housed. He was one of those who had paid some attention to the subject, and he believed that the death-rate proved where the greatest grievance was. Those who knew what the death-rate was in towns ought to look at home before they laid too much blame on the rural districts. The average rural death-rate, if his memory served him right, was about 16 in a thousand per annum, while in towns it very often approached 30 per thousand. This was a fearful difference, and though he had no doubt there was abundant room for improvement everywhere, he could not admit that the need for it was so great in the agricultural districts as in the towns. Those who were as old as he was could not but remember what a very great improvement had already taken place. It was impossible to shut one's eyes to this. Humble as many cottages in the country were, it was very rare to find one that had not two rooms; whereas those who knew anything of town populations were aware how many lived in one room. Moreover, it was very rare in the country to see a bed in the downstairs room. He was often surprised at this, considering the crowded condition of many dwellings, and the largeness of the families that occupied them; but he had rarely seen a bed on the ground floor. The downstairs room, too, in many of the country cottages, was as large as those where a whole family lived and slept altogether in towns. He could not help noticing those things, because he thought too much blame was laid on the condition of agricultural cottages. He should be very glad to see them improved; but there was evidently greater necessity for improvement elsewhere. There was another matter which he might be allowed to touch upon, as it was of some local importance. His colleagues and himself, and another gentleman whom he saw present, went yesterday to London in order to have an interview with the President of the Council, with reference to the restrictions that had been lately placed on the removal of sheep. It was true, indeed, that the terms of the Orders in Council did not actually prohibit the sending of sheep to market; but though a licence might enable a man to get sheep into a market, there was no human power of getting them out again; so that in point of fact the markets were closed. They were accompanied by the mayors of Oxford and Banbury, and some of the aldermen of those places, and they made such representations as they could to the Duke of Buckingham of the inconvenience that was suffered by the towns where the markets were held, and by the public at large, expressing a hope that if it was thought necessary to continue the restrictions something might at least be done to palliate the inconvenience. They were received, as might have been expected, with great courtesy, and were listened to very attentively. It was not, of course, for his grace personally to decide or help them, but they came away with the hope that some good result might follow the interview. He trusted that the misfortunes which his own part of the county had experienced through the miserable cattle-plague had now come to an end, and that, owing to the measures which had been taken by the Government, and through the kindness of Providence, the disorder would soon disappear. The decrease in the number of cases had been regular and steady, and the disease might now be almost said to have ceased. The last visitation, however, was of twelve years' duration, so that at present we could only hope and pray that there might not be a recurrence of the disease. If they were thus fortunate they would indeed have good reason to be thankful, especially when they considered the inconvenience which had been inflicted on all classes of society by the measures that had been rendered necessary. The closing of the markets had been a serious inconvenience, not only to agriculturists, but to tradesmen and every other class of the community. When they remembered that a curse of this sort lasted upon a previous occasion for twelve years, they must all bear with patience the restrictions which were deemed necessary in order more quickly to put an end to the ravages of the rinderpest. It was only by mutual forbearance that they could hope to attain this result, and he trusted therefore that whatever inconvenience might be suffered they would yield a cheerful obedience to all restrictive measures as long as they were considered necessary.

Colonel **NORTH** remarked that they would all be heartily rejoiced to see the labouring classes better housed than was now generally the case; but, unfortunately, the whole question was encumbered with obstacles. The great difficulty which he had himself experienced as a landlord had been in limiting the occupants of his cottages to the number for which they were adapted, for in spite of everything the cottagers would get a lodger if they possibly could. The hon. and gallant gentleman went on to say that if he found a young man who had married and had a large family, he took the earliest opportunity of putting him into a more spacious cottage. It was, however, impossible to limit the ladies to a particular number of children. Whenever he could he enlarged the cottages which were too small; but it often happened that the land in front or at back could not be obtained for this purpose, and in other ways difficulties frequently presented themselves. He agreed with his friend Mr. Henley, that on the whole the agricultural labourers were infinitely better "put up" than the industrial classes in such towns as Liverpool and Manchester. He had visited some of the labourers' dwellings in those places, and anything more painful and disgraceful he never beheld. They all owed much to agricultural labourers, and were consequently desirous to provide them with comfortable cottages.

THE HUGHENDEN HOLIDAY.—MR. DISRAELI AT HOME.

The farmers of the parish of Hughenden, in the county of Buckingham, have held a harvest festival, which was attended by a number of their own body as well as of their friends and bourers, and which was also honoured by the presence of the hancellor of the Exchequer and of Mrs. Disraeli.

The CHANCELLOR OF THE EXCHEQUER, in returning thanks his health being given, said: I am very much gratified by manner in which you have received my health, which has so kindly proposed by my excellent and much-esteemed d, the rural dean. I can assure you that, although he has red in such flattering terms to my position in other pects, what I most value in this world is the regard of my ighbours; and there is no place that interests me more than y home, the parish of Hughenden. We have met to-day pon a most interesting occasion—we have met to celebrate he most important event of the year—an event more important the existence or the formation of a ministry; and that is, in-gathering of the harvest. I am glad to be able to contulate you on the fact that the harvest in this district has the whole been a prosperous one. We have had abundant ps, and although the season has not been altogether so urable as we might have wished, I believe I may say without exaggeration that the dwellers in this district have availed mselves of all the opportunities which the state of the weather afforded, and have on the whole harvested their plenteous ps in good condition. Our harvest is not altogether ished, but I hope that this auspicious day will lead to its mplete and satisfactory conclusion. But although we may ve been fortunate in this respect, we must not forget at this ical moment the condition of many portions of our fellowjects. Let us hope that our friends in the north of England y now be favoured with a still and sunny fortnight that will w them also to bring to a happy termination the anxious ours of the year. Let us particularly hope that that may the lot of our fellow-subjects in Ireland. That island has en favoured this year with crops as plenteous as those of gland, and it depends very much upon the state of the weather whether their in-gathering will be as satisfactory as we st all desire. If that result should be attained, we shall n see, I hope, in that country, the commencement of a sperity and contentment which have for a long time been ating. It is at moments like this that our minds are peculy drawn to the feelings and position of those classes to hom we are mainly indebted for the great results of the year; and among those classes there is none which more deserves our notice than the farmers of England themselves. When we remember the hopes, the fears, the long anxiety, the vigilance, the care, the skill, which are necessary to bring about and conmmate the in-gathering of the crops, and which must attend their various and varying fate throughout the year, we must feel that there is no class of our fellow-subjects who have a greater claim on our sympathy and good feeling than the farmers of this country. And although great changes have taken place in the social condition of England during the last quarter of a century, the farmers still remain the most important class in the community, and for this single and simple reason, that no other class even now are so great employers of labour. In consequence of that position there devolves upon them a responsibility equal to their influence. Upon them depends in a great measure the prosperous condition of the labourers of the soil, and it is by their patience and vigilance and skill to a great extent that the general prosperity of the country is secured. Therefore at a moment like the present—the only day in the year in which it may be said that anxiety and labour cease in the agricultural districts—when there is no toil—when the object of the exertions of the preceding twelve months is accomplished and consummated—when we pause for a moment in a spirit of exultation and gratitude before we recommence the unceasing labours of the year that awaits us—let us remember the farmers of England, and let us congratulate them upon the present, and wish them well for the future. I think it right to associate the toast which I am now about to propose—the toast of "The Farmers of England"—with the names of two distinguished friends in this parish who now fill the hon. office of churchwardens. The one is Mr. Coates, of the Manor Farm, and the other is Mr. Hussey, of the Green.

After Mr. Coates and Mr. Hussey had briefly returned thanks—

The CHANCELLOR of the EXCHEQUER again rose and said: I am now going to propose a toast in which we must all feel a great interest, and which is to me one of special importance. This is a harvest-home; and although we are much indebted to the capital, the skill, and the energy of the class to whom I have before referred—the farmers; although without them we should none of us be in the position we now occupy, we must remember that the results of the harvest are mainly due to the industry, the vigour, and the goodwill of the children of the soil—the labourers of this country. One of the characteristics of the age in which we live is a just appreciation of the position of the labouring classes; and I believe that we all here present feel a peculiar interest in the welfare of those who labour on the soil of Old England. To elevate their condition, to render their lives more easy and more comfortable, is now the object of every intelligent man who finds himself placed in a responsible position; and I am always glad to know that in that part of England which we inhabit, and more especially in this district, labour has become so valuable that it is scarce, and that the consequence is that the condition of those who work in our fields—our associates in that great system of husbandry on which the prosperity of the country mainly depends—is upon the whole satisfactory. In consequence of the great demand for labour, wages are, in general, good; and with respect to another point of great importance, namely, the residences of our labourers, I can truly say that, as far as I could exercise any influence in this parish, I have done all that I could without ostentation, without interfering with their habits, without taking a course which they would find troublesome—I have done all that I could to improve their residences and to make their homes comfortable. I believe I may also say with truth that, generally speaking, the labourers in this parish are as good-hearted and worthy individuals in their vocation as could easily be found in this kingdom of England. It must be to them a moment of great interest when, after all their labours, they find the great result is attained, and the harvest is reaped. We have met them to-day, we have all attended the same place of worship, we have dined together in the same spirit of equality and perfect friendship, and in the same spirit I now propose that we should drink their healths with all the honours: "The Labourers of the Parish of Hughenden."

Mr. **Tilby**, a labourer, who had been for forty years in the employment of Mr. Coates, returned thanks in the name of the farm-labourers of the parish.

The health of the Rev. Mr. Clubbe, the vicar of Hughenden, was next proposed, in very complimentary terms, by the Chairman.

Mr. **Clubbe**, after having acknowledged the compliment, proposed "The Health of Mrs. Disraeli."

The **Chancellor** of the **Exchequer** responded to the toast as follows: My wife says that in order to justify the flattering character which our excellent vicar has given her, and in order to substantiate her claim to the reputation of being the most active of human beings—in which I entirely concur—she thinks that the sooner you adjourn from this tent to the park and commence to dance the better. She also informs me that she has given directions that the turf should be shaven in order to assist you in tripping on the "light fantastic toe." I hope you will, in honour of the toast, comply with this request; and I have little doubt but you will do so most willingly. But before we adjourn there is one further toast I am anxious to propose: "The Health of the Visitors to our rural feast to-day."

The compliment was acknowledged by the Rev. Mr. Graves; and the company afterwards adjourned to the park, and spent the remainder of the afternoon in a variety of rural amusements.

EASINGWOLD AGRICULTURAL SHOW.

The sixth annual exhibition of the Easingwold District Agricultural Society took place in September. The unpropitious weather had, of course, a considerable effect on the attendance. Notwithstanding the absence of cattle, the entries of stock were nearly as large as on any previous occasion. The place of honour was occupied by the horses, few larger or finer displays having been witnessed in Yorkshire. There was a good show of sheep and poultry, but the pigs were not quite up to the mark.

Judges.—*Hunters and roadsters:* Messrs. C. N. Nainby, Barnoldby-le-Beck, Lincolnshire; T. Sutton, Alwent, Darlington; and W. Lancaster, Morton Grange, Northallerton.—*Coach and agricultural horses:* Messrs. J. Bowman, Bank House, Uvington; and R. T. Graves, Manor House, Harton. *Sheep and pigs:* Messrs. G. Deaton, Osgoldby; R. Foxton, Welburn; and C. Sergeant, Hunsingore, near Wetherby.

The following is the list of prizes:

HORSES.

Mare and foal for hunting, W. and B. Muzeen, South Holme; second, J. Roberts, Terrington.

Hunter, any age (mare or gelding) to be ridden over hurdles, G. Robson, Shires; second, T. Harrison, Acaster Hill.

Four-year-old hunter (mare or gelding), to be ridden over hurdles, first and second, J. Robson, Windle Beck.

Fencer of any age, to be ridden by farmers, farmers' sons, or tradesmen, W. and B. Muzeen; second, T. Marley, Terrington.

Three years old hunting gelding, R. H. Gilbert, Thorton-le-street; second, R. Batty, Tollerton.

Three years old hunting filly, J. Robson; second, J. Mason, Rooker-hill.

Two years old hunting gelding, T. Marley; second, A. Jefferson, Kilburn Park.

Two years old hunting filly, R. Batty, Tollerton; second, T. Manfield.

Yearling gelding for hunting, T. Plummer, Birdforth; second, W. and B. Muzeen.

Yearling hunting filly, T. Manfield; second, J. Welburn, The Lund.

Mare and foal for coaching, W. and B. Muzeen; second, T. Manfield, Thirkleby.

Carriage horse, four or five years old, not exceeding 16 hands, T. and J. Coates, Peep-o'-Day; second, R. Batty, Tollerton.

Three years old coaching gelding, above 15 hands, action and pace to be considered by the judges, J. Harrison, Wilstrop Hall; second, W. Robinson, Thormanby.

Three years old coaching filly, T. Ireland, Slingsby; second, G. Burton, Huby.

Two years old coaching gelding, H. R. W. Hart, Dunnington Lodge; second, T. Manfield, Thirkleby.

Two years old coaching filly, R. Myers, Harum Mill.

Yearling coaching gelding, W. Robinson, Thormanby; second, T. Plummer, Birdforth.

Yearling coaching filly, W. Robinson; second, J. Gilliand, Crayke.

Mare and foal for roadsters, Lady Payan Gallwey, Thirkleby Park; second, T. Pearson, Manderby Hall.

Three years old roadster gelding, H. R. W. Hart; second, J. Thackray, Hessay.

Three years old roadster gelding, W. Buttery, Helperby; second, T. Ward, Bohemia.

Two years old roadster gelding, J. Smithson, Hessay; second, W. and B. Muzeen.

Two years old roadster filly, H. R. W. Hart; second, J. Clark, Rainton.

Yearling roadster filly, A. Grainger; second, R. Batty.

Hackney mare or gelding, any age, T. Johnson, Northallerton; second, S. Franks, Brandsby.

Four years old hackney (mare or gelding), W. and B. Muzeen; second, R. W. Bowman, Ripon.

Mare and foal for agricultural purposes, R. Pearson, Crayke; second, J. Knowles, Crayke.

Three years old agricultural gelding or filly, Sir G. O. Wombwell, Bart., Newburgh Park.

Two years old agricultural gelding or filly, M. A. Jefferson, Kilburn Park; second, M. Dixon, Crake.

Yearling agricultural gelding or filly, J. Jackson, Close House; second, R. Pearson, Crake.

Pair of agricultural horses of either sex having been regularly worked during the season, Sir G. O. Wombwell, Bart.

Agricultural mare or gelding which has been regularly worked during the season, W. Sleightholme, Marton; second, G. W. Appleyard, Angram Hall.

Pony not exceeding 14½ hands, H. Danby, East Lilling; second, W. F. Barwick, Lund Head.

Pony not exceeding 13 hands, W. Robinson, Thormanby Hill; second, Rev. J. Higginson, Thormanby.

LEICESTER AND LONG-WOOLLED SHEEP.

Ram of any age, pure Leicester, J. Simpson, Spofforth Park; second, S. Wiley, Brandsby.

Shearling ram, pure Leicester, E. Riley, Kipling Cotes; second, T. and J. Coates, Peep o' Day.

Ram of any age, not qualified to compete as a Leicester, J. Simpson; second, R. Allen, Crankley.

Shearling ram, not qualified to compete as a Leicester, first and second, E. Riley.

Pen of five ewes, having suckled lambs to July 1, 1866, J. Simpson; second, W. Rownthwaite, East Lilling.

Pen of five shearling gimmers, S. Wiley; second J. Mason, Rooker Hill.

Pen of five shearling wethers, J. Mason.

Pen of five gimmer lambs, J. Simpson; second, R. Plummer, Carlton, Husthwaite.

Pen of five wether lambs, R. Plummer.

Tup lamb, R. Allen; second, J. Simpson.

EXTRA STOCK.

Sheep, R. Allen.

PIGS.

Boar, large or middle breed, upwards of 12 months old, G. Pettinger, Rose Cottage.

Sow, large or middle breed, upwards of 16 months, W. Holmes, York; second, W. F. Barwick, Lund Head.

Boar, large or middle breed, under 12 months, H. Leaf, Naburn; second, J. Stanhope, Ampleforth.

Sow, large or middle breed, under 16 months, H. Leaf; second, R. Winsor, Ampleforth.

Boar, small breed, upwards of 12 months, W. D. Hawking, Linton-on-Ouse; second, R. Sedgwick, Woolpots.

Sow, small breed, upwards of 16 months, Sir G. O. Wombwell, Baronet, Newburgh Park; second, G. Earle, High Roans.

Boar, small breed, under 12 months, T. Boyes, Harum.

Sow, small breed, under 16 months, first and second, Sir G. O. Wombwell, Bart.

Three store pigs of the same litter, second, G. Pettinger.

Store pig, the property of a tradesman, first and second, H. Martin, Easingwold.

Pig, the property of a cottager who does not keep a cow, first and second, E. Addison, Easingwold.

WHITBY AGRICULTURAL SOCIETY.

This association ranks amongst the earliest, having been established no less than thirty-three years. The Committee on Wednesday, Aug. 29, in holding the thirty-third exhibition of stock and implements, in the commodious field belonging to Mr. Simpson, at Bagdale, in the immediate outskirts of the town, had the mortification of seeing the showyard very thin of company, owing to the bad weather.

The show of horses was of a first-rate character, and exceeded expectation, both in the quality of the animals shown and the number of entries. Some of the finest-bred horses of Yorkshire were brought into the ring to compete for the prizes. Coaching brood-mares were thirteen in number, and they were a prime lot, a fine bay belonging to Messrs. Coulson, Castle Howard, obtaining first honours. There were no less than seventeen coaching-foals, eleven yearling coaching-colts and fillies, and twenty-three coaching fillies and geldings. The hunting-foals mustered well, as did also the hunting-colts and fillies; and the animals belonging to the hunting classes numbered in the aggregate fifty-two. The roadsters were in very prime condition, as were also the agricultural horses. The sheep were prolific in wool and mutton, and were highly creditable to the district. The pigs were good, but limited in number. Ploughs, turnip-cutters, harrows, and scarifiers, were in the field; but they, like the other sections of the show, attracted little attention, owing to the rain.

The following gentlemen officiated as the judges:—

Horses.—Mr. A. Maynard, Skinningrove; Mr. John Johnson, Brigham; Mr. G. Simpson, Kilnwick Percy.

Sheep and Pigs.—Mr. Richard Lovel, Knapton; Mr. Thomas Stamper, Oswaldkirk.

AWARD OF PRIZES.

STALLIONS.

Thorough-bred, £5, Mr. Philip Hogarth.

Coaching, £5, Mr. James Dowey, Commondale.

Roadster, £5, Mr. J. H. Rispin.

Agricultural purposes, £5, Mr. Thomas Ventriss, Staintondale.

HORSES.

Coaching brood mare, with her foal or stinted, £4, Messrs. W. and F. Coulson, Castle Howard; second, £1, Mr. John Porritt.

Coaching foal, colt or filly, £1, Mr. W. Burnett; second, 10s., Mr. John Porritt.

Yearling coaching colt or gelding, £2, Mr. J. Sanderson, Danby.

Yearling coaching filly, £2, Mr. Wm. Harrison, Hutton Rudby; second, £1, Mr. John Hugill, Fryup.

Two years old coaching gelding, £2, Mr. George Gill; second, £1, Mr. J. T. Pinder, Linton Grange.

Two years old coaching filly, £2, Mr. Richard Myres, Helmsley; second, £2, Mr. Robert Webster, Commondale.

Three years old coaching gelding, £2, Messrs. J. and W. Grayson.

Three years old coaching filly, £2, Mr. Matthew Young, Skelton.

Hunting brood mare, with her foal or stinted, £4, Mr. Thomas Crosby.

Agricultural brood mare, with her foal or stinted, £3, Mr. Joseph Smith, Risebro'.

Agricultural foal, colt or filly, £1, Mr. Joseph Smith; second, 10s., Mr. James H. Wood.

Yearling agricultural colt or filly, £2, Mr. T. P. Scoby; second, £1, Mr. Joseph Smith.

Two years old agricultural filly or gelding, £2, Mr. T. P. Scoby, Rook Barugh; second, £1, Mr. Joseph Smith.

SPECIAL PRIZES.

Hunting mare or gelding, £10, Mr. T. Sutton, Alwent; second, £5, Mr. Joseph Robson, Ganton.

Roadster mare or gelding, over 14 hands, £4, Mr. J. W. Johnson, Northallerton; second, £1, Mr. Geo. Leighton, jun.; third, Mr. Joseph Robson.

Pony mare or gelding, not over 14 hands, £2, Mr. John Weighill; second, £1, Mr. Charles Bagnall.

DISTRICT PRIZES FOR HORSES.

Hunting mare or gelding, £4, Mr. Wm. Ward, Banniel Flat; second, £1, Mr. Thos. Ward.

DISTRICT PRIZES FOR LEICESTER SHEEP.

Two-shear or aged ram, £2, the Marquis of Normanby; second, £1, Mr. Wm. Watson.

Shearling ram, £2, and second £1, Mr. Thos. Frankland.

Tup lamb, £2, Mr. Thos. Frankland; second, £1, Mr. E. Corner, Broad Ings; third, 10s., Mr. T. Newton.

Pen of five ewes, that have suckled lambs up to the 15th of July, £2, and second, £1, Mr. E. Corner, Broad Ings.

Pen of five shearling gimmers, £2, Mr. E. Corner, Broad Ings; second, £1, Mr. Joseph Wilkinson.

Pen of five gimmer lambs, £2, Mr. Thomas Frankland; second, £1, Mr. E. Corner, Broad Ings.

DISTRICT PRIZES FOR MOOR SHEEP.

Shearling moor tup, Mr. Wm. Rudsdale.

Moor tup lamb, £1, and second, 10s., Mr. Wm. Rudsdale.

Pen of five moor ewes, having suckled lambs up to the 1st of August, £1, Mr. W. Rudsdale.

Pen of five wethers, two-shear or upwards, bred by the exhibitor, £1, Mr. John Peirson.

DISTRICT PRIZES FOR PIGS.

Boar of any breed, under six months old, £1, Mr. Wm. Rudsdale.

Boar of any large breed, over six months old, £1, Mr. Joseph Wilkinson.

Sow or gilt of any large breed, over six months old, £2, and second, £1, Mr. John Hamilton.

Boar of any other breed, over six months old, not qualified to compete in class 49, £2, Mr. W. Rudsdale.

Sow or gilt of any other breed, over six months old, not qualified to compete in class 50, £2, Mr. W. Rudsdale; second, £1, Mr. E. Corner, Esk Hall.

Three store pigs of one litter, under six months old, £1, Mr. E. Corner, Esk Hall.

Three store pigs, of one litter, under twelve and over six months old, £1 10s., Mr. John Plows, Castleton; second, 10s., Mr. E. Corner, Esk Hall.

Cottager's pig, the owner not keeping more than one cow, £1, and second, 10s., Mr. J. Hamilton.

MARKET DRAYTON AGRICULTURAL SOCIETY.

The seventh annual meeting of the Market Drayton Agricultural Society, which has for its objects the advancement of agriculture, and the encouragement of skill, industry, and good conduct amongst cottagers, servants, and labourers, has just been held. The weather was exceedingly favourable, and the consequence was a large and fashionable attendance of visitors. Owing to the continuance of the rinderpest, which, happily, is now however subsiding in this district, there was, of course, no cattle show. The fact, too, that sheep and pigs are prohibited by the local authorities from being brought in from the adjoining counties of Staffordshire and Cheshire caused an unmistakable decrease in both these departments, in sheep especially; while of horses there was only a middling show. The prizes in the aggregate amounted to little short of £200. Messrs. A. W. Gower and Son were awarded £5 for their show of farming implements and machinery.

The judges were: For horses, Sir Vincent Corbet and Mr. H. R. Corbet, master of the Cheshire fox-hounds; for pigs, Mr. James Boote and Mr. Dobell; for sheep, Mr. Wedge, Mr. Ryder, and Mr. Hassell. The following is

THE PRIZE LIST.

HORSES.

The best leaping horse, first prize £5, Mr. Eaton's "Flying Maltster;" second £2, Mr. Weston Shelley, Burley, dam "Moonraker."

The best mare with foal, for hunting purposes, first prize £3, Mr. Joseph Thursfield, Lightwood Green, Audlem; second £1 10s., Mr. Thomas Burgess, Burleydam; commended, Mr. J. W. Shelley, Burleydam.

The best horse for saddle, harness, and general purposes, first prize £2, Mr. J. W. Shelley, Burleydam; second £1, Mr. John Bourne, of the Harbour; commended, Dr. W. W. Saxton, Drayton.

For the best colt, for saddle, harness, and general purposes, foaled 1865, first prize £2, Mr. Joseph Thursfield, Lightwood Green; second £1, Mr. J. W. Shelley, Burleydam.

The best mare with foal, for agricultural purposes, first prize £3, Mr. Thomas Lester, Ollerton; second £1 10s., Mr. Charles Read, Spoonley.

The best pair of horses, for agricultural purposes, first prize £4, Mr. Joseph Lea; second £2, Mr. William Dickin, The Lloyd.

The best horse, for agricultural purposes, first prize £2, Mr. Samuel Bourne, Goldsmith House; second £1, Mr. Richard Eardley, Bellaport Lodge Farm; commended, Mr. J. Lea.

The best colt, for agricultural purposes, foaled in 1864, first prize £2, Mr. Richard Eardley; second £1, Mr. George Lunt, The Bank House, Shevington.

The best colt, for agricultural purposes, foaled in 1865, first prize £2, Mr. W. Dicken, The Lloyd.

EXTRA STOCK.

Medals given to Mr. James Morrey, Drayton, for black cob, 14½ hands, rising 5 years old; Thomas Cartlich, Esq., Manor-house, Woore, for grey waggon colt, two years old; and Mr. James Morrey, for a pair of cobs, for harness.

SHEEP.

For the best Shropshire or other short-wool ram, of any age, but age to be taken into consideration, first prize £5, Mr. G. H. Wickham, Broomhall; second, Mr. Samuel Bourne, Goldsmith House.

Additional prize given by Mr. C. Donaldson Hudson, for the best Shropshire ram, lambed in 1865, £10, Mr. Lea, Stoke Grange.

The best Shropshire or other short-wool ram lamb, lambed in 1866, first £5, Mr. G. H. Wickham, Broomhall; second £1 10s., Messrs. R. H. and H. B. Clive, Styche Hall.

The best pen of five Shropshire or other short-wool wethers, of any age, but age to be taken into consideration, first £4, second £2, Mr. Furnival Norton.

The best pen of five Shropshire or other short-wool ewes, of any age, each having produced a lamb in 1866, first £5, Mr. John Thomas, Longerslow (Mr. Furnival); second £2 10s., Messrs. R. H. and H. B. Clive, Styche Hall, who were also highly commended.

For the best pen of five Shropshire or other short-wool ewes, lambed in 1865, first £4, second £2, Mr. G. H. Wickham, Broomhall.

The best pen of five Shropshire or other short-wool ewe lambs, lambed in 1866, first £3, Mr. J. Broughton, Almington Hall; second £1 10s., Messrs. R. H. and H. B. Clive, Styche Hall.

The best long-wool ram, of any age, but age to be taken into consideration, first £4, Mr. William Mate, Hanwood House.

For the best pen of five long-wool ewes, of any age, but age to be taken into consideration, first £3, and second £1 10s., Messrs. R. H. and H. B. Clive, Styche Hall.

PIGS.

Best boar of any age, first £2, Mr. Hill Wade, Drayton (Mr. H. T. Smith's breed); second, Mr. J. M. Morris, Drayton (bred by Mr. Etches, Whitchurch.

Best sow with farrow of sucking pigs, first £2, Mr. John Thomas; second £1, Mr. Dicken.

For the best sow for breeding purposes, first £1 10s., Mr. Thomas Simon, Ternhill; second £1, Mr. H. T. Smith, Corbet Arms Hotel, Drayton (bred by exhibitor, in pig).

For the best pig, the property of a cottager in the employ of a member, first £1, Edward Gosnell, Drayton, white pig eleven months old; second 10s., Ellen Hickman, Drayton.

EXTRA STOCK.

A medal was awarded to Mr. Enoch Hughes, Drayton, for three white store pigs, seven months old, bred by Sillitoe, Fordhall.

THE DINNER.

Upwards of sixty gentlemen sat down, the president, C. Mr. Donaldson Hudson, occupying the chair.

The CHAIRMAN, in the course of the evening, when acknowledging the compliment of his health being proposed, said: Many persons, no doubt, were loud as to the inexpediency of holding a meeting at all. Objections were urged against it on the ground that as they had suffered so severely on account of the cattle-plague, the necessary subscriptions would not be forthcoming, and that the show would not be a success, speaking in a commercial point of view. It needed little discrimination to see that the first objection was not, at any rate, a very valuable one. The importance of such meetings must be so obvious to the farmers generally, that he was sure no appreciable difference would be perceived in the amount of subscriptions. Even supposing it was not a success, they had, at all events, avoided the great evil of stopping their annual exhibition altogether, for it was much easier to keep a thing going than having to start afresh. With regard to their meeting that day, he thought they had every reason to congratulate themselves; for, so far as sheep and pigs were concerned, seeing that they were debarred from taking them in from Cheshire and Staffordshire, it was a matter of wonderment that they had made so large a show. Some of the implements were very good, and equal to anything of the kind in any other show in the kingdom. His only regret, in common with the other subscribers, was the absence of cattle in their showyard, occasioned by the worst of all bovine scourges, the rinderpest; but, after all, they ought not to take a gloomy view of the matter. In some parts of England and Wales the disease had ceased altogether; and in England it was to be hoped that in a few weeks there would not be a single vestige of it left. In the week ending the 1st instant, the number of cattle said to be infected had dwindled down to 99, whereas in the previous week they amounted to 126. He believed a certain amount of good would ultimately accrue from the misfortune under which they had been and were still labouring, great as that misfortune undoubtedly was—that more sheep would be introduced into that neighbourhood than had ever been before

—that greater attention would be paid to the housing of cattle, space, and sufficiency of food, and that such a reformation would take place in these matters as had not hitherto been witnessed. However much they had suffered—however much they might have deplored the appearance of the cattle plague amongst them, he believed that when the memory of those calamities, by which many of them were still suffering, was worn away, they should look upon it not only without regret but with feelings of complacency.

Mr. **Broughton** gave "The Judges." Theirs was an arduous duty, and it was next to an impossibility to please everybody. He had looked round the show, and from what he saw he believed that in the sheep department every competitor got a prize; so that no one could complain in that respect. For implements there was no competition, and, with respect to the horses, he believed that the best certainly got the prize. They were indebted to their worthy chairman for a prize of £10 for the best shearling ram, and he was sorry that, owing in a great measure to the Orders in Council and the consequent local restrictions, there was but one competitor. He thought the society would fall to the ground unless it was extended. They might, for instance, with advantage join with Newport and Whitchurch, and hold the show periodically at either place. He felt that if something of that kind was not done they should have to invite the co-operation of other counties, a course not at all desirable. So far as the judges were concerned, there was no objection to any of their awards that he had heard of, and therefore they must have given satisfaction.

The toast was acknowledged by Mr. H. R. Corbet and Mr. Goulborn, the former gentleman expressing his opinion that the horses made but an inferior show.

WHEAT-GROWING IN KENTUCKY.

The following extract is from a Report on Agriculture, ubmitted through the chairman of the committee appointed by the Kentucky Agricultural and Mechanical Association, Dr. R. J. **Spurr**:

Your committee now approach the wheat crop, which they have purposely avoided until now. It has been one of the taple crops of this section. Its repeated failures have much discouraged farmers, and it will be largely abandoned unless some remedy can be found for the disasters attending its cultivation—these are four in number: First, winter killing; second, smut; third, fly; and fourth, rust. The first is only an occasional thing to a serious extent, as it was the past winter, though from our open and variable winters it is injured more or less every winter. The writer saw a piece of barley that stood the last winter well, that was sown in the corn, the stalks of which were left standing on it all winter. Some djoining, upon an equal quantity of land, without this protection, was nearly destroyed. The inference is that this *ight* protection prevented it.

The 2nd, smut: It now appears to be the received opinion hat blue-stone (sulphate of copper), one pound to six or eight ushels of seed wheat, is a sure remedy.

3rd, the fly, or as it is popularly known, the Hessian fly, hich was not known in our country until the war of the evolution, and was supposed to have been introduced here in e straw of the bedding of those mercenary troops (the Hesians) whom our good mother sent over here to cut our rebel roats. Your committee know of no remedy for this pest. has been thought that late-sowing obviated this to some ext. This is no doubt true. But there are several difficulties tending it. First, late-sown wheat is more liable to be winr-killed than that which is early sown. Second, it is just as ible to the spring crop of the fly as the other. And third, it escapes these, it is much more liable to that worst of all ficulties, rust—indeed almost sure to be materially injured. hen the question comes, What shall we do? It would proibly be best not to sow early or late, but take a medium, say om the 25th September to 10th October. Very early-sown heat is liable to be badly injured by the insect.

Years ago the fly was as bad as now. In consequence ereof the cultivation of this crop was nearly abandoned— bought our flour from other States—the fly disappeared— again commenced its cultivation and became large exrters.

4th, rust: For this, the worst of all injuries, your comittee scarcely know what to say or recommend. It has so baffled nearly every effort to modify it, and in consequence its destructive effects, it has become a matter of serious iniry what can be done to obviate it; our bread, to a large tent depends upon the favourable solution of this problem. is not the intention of your committee to go into an intrie scientific investigation of the nature of the disease called t: probably the popularly received opinion may be as correct any other (that is) that it is caused by the expansion of the fluids of the sap vessels by very hot weather rupturing their coats, permitting the sap to escape, and thus producing the disease. Be this so or not, every farmer knows it when it appears, and it is always a season of much anxiety with him until his crop shall have passed this danger; too often, however, his brightest hopes and prospects are entirely blasted.

It is necessary to a proper understanding of this matter, to go back some fifty years, and take a slight review of the history of the cultivation of wheat here. At the close of the war of 1812 the most popular wheat then in cultivation was the Lammas, a smooth head, white variety. This continued to be cultivated, doing well, until some time between 1820 and 1830. It was abandoned on account of rusting badly. The red chaff bearded took its place, and did well until near 1840, when it failed on account of rust. The Mediterranean was then introduced, and did well until a few years past; it is now as uncertain as any other variety. Since the first sowing of Mediterranean there have been procured for use here two popular northern varieties, the New York Premium and the Blue Stem; each of these is now uncertain, being very liable to rust. There has been more recently introduced here a southern variety, the Alabama, which has resisted the rust to a larger degree than any well known variety now here, but it is manifest to the careful observer that it is losing its power to resist disease.

From the foregoing statement, which in the main is believed to be true, the presumption arises that the continuous propagation of any one variety for a series of years, in one locality, causes an impairment of its cultivation, rendering it more liable to be affected by atmospheric changes, and consequently predisposed to diseased action. Yet it may possibly be the case, that even under this predisposition to disease, all things being favourable, a good crop may be produced. Then the remedy: Your committee would in the first place suggest that good might result from farmers in different sections of the country making an exchange of seed wheat, and that this interchange should take place every few years. Second—that which they would more confidently recommend is the procurement of good and hardy varieties from distant localities, as Iowa, Wisconsin, Minnesota, Georgia, Alabama, &c. In opposition to all theory upon the subject, your committee are of opinion, from the facts before them, that some of our earliest, most hardy and valuable varieties have been procured from the south. The best crop of wheat of this year's growth in the west end of this county is the product of seed procured from Southern Tennessee last fall. Your committee finds some difficulty in making an estimate of the product of the wheat crop; they would with diffidence submit the following figures: Injury by winter-killing, 40 per cent.; by rust or fly, 20 per cent.; leaving the yield 40 per cent. of an average crop. The extent of injury from recent heavy rains is not yet known, and not estimated. If this estimate be correct, then we will have enough for home consumption, but nothing for export.

THE LABOURER'S HOME.

"Nice weather this, for you farmers," said a return-ticket tourist, as on a fine morning he encountered an agriculturist on one of his own foot-paths. "And not so bad for you excursionists," immediately returned the other, not perhaps altogether quite pleased with the patronising air of the illustrious stranger. But so it is. At this season of the year more especially, everybody on an "outing" has something to say about "you farmers." Land-agents without any particular business of their own find themselves in the largest type of the leading columns, on the strength of being ready to abuse the present state of agriculture in a somewhat northern accent, and to contradict each other with amusing authority as to whether the wheat-crop is under or up to an average. Only let a bagman sit down to dine at the market ordinary, and not a man at the table knows so much as to the farming of the county—what it is and what it ought to be. Bring your London lawyer down to shoot partridges, and he fairly boils over with practical suggestions as to how you may make more of your land and your capital. Mr. Mechi, after all, by no means stands alone, as half his neighbours in Regent-street would be quite as ready to fall foul of the many mistakes so continually associated with the cultivation of the soil. There would really seem to be nothing so safe as this sort of thing, whether you be a Radical M.P., a City Merchant, or a Fleet-street Journalist out for a holiday. The whole system is wrong from beginning to end. The landlords are not men of business; the tenants are not sufficiently advanced for the time they live in; while of the condition of the labourer it is scarcely possible to speak too strongly. And here, more commonly, the force of the attack centres itself. Only look to the wages the working-man receives in the rural districts, the amount of intelligence he exhibits, and the dwelling he inhabits. Can his social or moral welfare be properly regarded under such circumstances? More care is taken of a fat beast; the animal is better fed and housed than the father of a family. Continual neglect is his birthright. He is overworked and under-fed; and he exists, accordingly, in a very atmosphere of moody discontent and coarse dissipation.

All this passes current enough with people who in reality know little or nothing of the subject so broached. Such a theme, moreover, never wears itself out. The labourer's cottage, the labourer's education, and the labourer's moral status will no doubt furnish again during this autumn the text-word for many an indignant address. Would these philanthropists be good enough, in the first place, to look at home? Would it surely not be better that such orators should put their own houses in order ere they knock so loudly at other men's doors? The honourable gentleman, who as a visitor at the cross-table hints so broadly or laments so feelingly the want of care with which the farm-servant is habitually treated, gives utterance, often unwittingly enough, to a sheer untruth. If, as is as likely as not, he be the immaculate representative of some independent borough, he will frequently find more neglect, more immorality, and less comfort within the precincts of such a town, than there shall be in a whole county of country folks. Or, if he be a commercial man in a large way, the employer of hundreds of hands in his mills or his works, the test of public inquiry shall show him where is the better cared the two; who of the two men has the more reason tisfied with his lot—the field labourer or the City-side spinner? The question solves itself. The one is ever ready to rise and "strike," but upon the other the covert call of the demagogue falls idly and unanswered.

It is, we repeat, a gross untruth to say that the rural labourer does not command the consideration of his employer. For many years past the greatest efforts have been made to improve his condition. Who but the farmers themselves broke through the narrow boundaries of the law of settlement, and gave the man a fair market for that he had to sell? Who but his master, again, has waged war so incessantly against the contaminating influence of the beershop, though this movement has not been supported as it should have been in high places? Is not a better education being provided? and are not the plans of labourers' cottages as familiar to landlords and their agents as to the readers of agricultural journals? We give "the poor man," moreover, a place at our agricultural festivals; and self-sufficient citizens laugh, and ask why we will not do more for him in other ways? Can prizes for good conduct, skilled labour, or garden produce, tend to any useful end? The enjoyment of HOME may be thus induced; and while the artizan is concocting another lock-out in a gin-shop, the ploughman shall be getting up his potatoes and "remembering" how long he has lived in the same place. Some of the daily journals of course jeered at Mr. Disraeli when he spoke the other day at Hughenden to "one of the characteristics of the age in which we live being a just appreciation of the position of the labouring classes," and to "having done all that he could, without ostentation, without interfering with their habits, and without taking a course which they would find troublesome, to improve their residences and make their homes comfortable." This may be all very absurd, though we really cannot see the matter in such a light; as on the very same day what did that sound man and good country gentleman, Mr. Henley, say on the very same subject at Thame? "He could hardly help touching upon a matter which had just been alluded to, namely, the dwellings of our humbler neighbours. Now he did not believe the agricultural labourers were the worst housed. He was one of those who had paid some attention to the subject, and he believed that the death-rate proved where the greatest grievance was. Those who knew what the death-rate in towns was ought to look at home before they laid too much blame on agriculturists. The average rural death-rate, if his memory served him right, was about 16 in the thousand per annum, whereas in towns it very often approached 30 per thousand. This was a fearful difference, and though no doubt there was abundant room for improvement everywhere, he did not believe the greatest need of improvement was in the agricultural districts so much as in the towns. Those who were as old as he was could not forget that there had already been a very great improvement. It was impossible to shut one's eyes to this. Humble as many cottages in the country were, there was rarely a cottage without two rooms; whereas those who knew anything of town populations were aware how many thousands lived in one room. Again, it was very rare in the country to see a bed in the downstairs room. This was a fact he was often surprised at, considering the crowded condition of many dwellings and the largeness of the families that occupied them; but he had rarely seen a bed in the downstairs room. Those rooms, too, in many of the country cottages were quite as large as those where a whole family lived and slept all together in towns. He could not help noticing those things, because he thought too much blame was thrown upon the condition of the agricultural dwellings. He should be very glad to see them improved, but the necessity for improvement was evidently greater elsewhere." Everyone who has any knowledge whatever of country-life will at once admit the truth of all Mr. Henley advances. There *has* been very great improvement; the rural population *is* housed with more decency and comfort than the poor in towns, and the *necessity* for improvement is evidently greater elsewhere; and yet, no doubt the condition of the farm-labourer will be cited again and again during the recess, as it appears to have been by one of the previous speakers at Thame, as a matter for special lamentation, or more direct reproof. As in the salute of the excursionist, there is something of an impertinence in the tone in which people engaged in other pursuits are apt to address "you farmers"; and this is perhaps never more noticeable than when they are volunteering their advice and interference on the relations between master and man. As Colonel North said, in following Mr. Henley, "He had seen in Liverpool and Manchester many of a far inferior description to the ordinary labourers' cottages in the agricultural districts," and we only hope that the outside critics who are so ready with their remarks will bear this in mind. We give such a caution the more impressively, as it is precisely this Manchester School of man that is always so ready to look up "you farmers."

THE HOP CROP, AND THE IMPORTATIONS.

The accounts of the hop crop are not favourable. The weather has been against success, and large results are owhere expected. In the face of a greatly increased manufacture and consumption of malt liquors, a larger dependence on foreign growers for a supply of the salutary bitter necessary for admixture with malt is discouraging. Of late years this description of husbandry seems to have been less and less profitable. Even the fertility of the lands which by liberal manuring and tillage have produced good crops for centuries seems to be dying out. As has been well observed lately, of all the branches of agriculture known to England, that of hops ought to be among the most progressive. That healthy bitter is wanted more and more, in proportion as the consumption of the best beer increases. No wholesome substitute for it has yet been discovered, although many materals have been empirically tried. Cascarilla bark, chiretta, quassia, and such like bitters, are but poor substitutes after all for the genuine flavour of the native hop, with which Amerian or Bavarian growers can never successfully compete, in he estimation of the brewer.

Our foreign supplies necessarily vary annually with the uccess or failure of our home production. A good crop makes us less dependent on extraneous supplies. In 1861, 1862, and 1863 the foreign imports of hops were eavy, averaging over 140,000 cwts.; but in the last three ears we have required less foreign hops. In 1864 we mported 98,656 cwt., in 1865 82,489 cwt., and in the irst six months of this year only 22,000 cwts. The oreign growth of hops of course fluctuates with seasons, s well as our own. In Germany, including Bavaria, ohemia, Baden, Wurtemburg, &c., it reaches 305,000 wt., Belgium 80,000 cwt., France 50,000 cwt., and the nited States of America 50,000 cwt.: in round numbers 5,000 tons.

The French, it would seem, are beginning, like their erman neighbours, to appreciate more largely the wholeme beverage beer. In France there is now a larger extent of land under cultivation with hops than in the United ingdom. And an international exhibition of hops, and verything relating to their culture, and of beer, and all elating to its manufacture, is announced to be held at ijon early next month, to last from the 10th to the 15th. he producers, owners, and manufacturers of brewing tensils of all countries are invited to take part; and izes are offered. It appears to be under the patronage the Central Committee of Agriculture of the Côte Or. Had such a competitive exhibition been held in ermany—the land of beer-drinkers—we should have ought it more in character; but such a gathering in rance opens up a new field of enquiry.

Beer is largely drunk by at least two-thirds of the population of Europe; but in France the consumption has hitherto been comparatively small, as compared with wine. In Paris, however, the consumption of beer has always been large, from the number of foreigners. The beers of Lille, Arras, Amiens, Soissons, and some other towns have a good reputation, and in the last ten years the consumption of beer has doubled. In the production of superior hops, however, it is doubtful whether the French will ever equal our growers, as they are little disposed to go to the great outlay necessary in tillage, manures, and harvesting, and preparing the fickle crop.

Last year about 53½ million bushels of malt were returned as used in the United Kingdom—an increase of nearly 20 million bushels since 1855. In Scotland there is very little progress in malt consumption, but it has been large and steady in England and Ireland. The porter-trade of Dublin, for instance, both for home-consumption and export, has made enormous strides in the last five years. The export of malt-liquors from Dublin has risen from 86,735 hogsheads in 1854 to 229,664 hogsheads in 1865, of which Guinness's brewery ships about one-half. Barley, which forms the basis of the manufacture of beer, is grown with great success in most of the midland and southern counties of Ireland; and as it is essential for the purpose of malting that it be of superior quality, this large consumption for the Dublin brewers must have a very material influence on its culture. This will be at once understood when we state that in Guinness's brewery alone 200,000 barrels of malt were consumed last year, all of which were grown in Ireland; and allowing a yield of, say, fifteen barrels per statute acre, this must have been the produce of more than thirteen thousand acres of land. From the malt-duty returns of last year it appears that there are only four brewers in England who now mash more than 200,000 barrels in their yearly brewings. With respect to the breweries of other countries, the largest on the continent—that of Mr. Duker, of Vienna—does not brew more than 100,000 barrels of malt per annum. The annual consumption of hops has been estimated at 10lbs. per quarter of malt used. The consumption in London is over that amount; and when the great quantity of bitter-ale brewed at Burton, Edinburgh, and other places, is taken into consideration, 12lbs. to the quarter is probably nearer to the average, and the aggregate quantity used would therefore be about 78 million pounds of hops per annum.

As upwards of 6½ million quarters of malt are used in making beer—taking the usual average of a quarter for 3½ barrels—we have an annual production of over 844 million gallons of beer, or in the proportion of 40 gallons per head to the population, supposing all were used at home. And deducting the exports—some 20 million gallons—the consumption is not very largely reduced. It speaks well for the prosperity and well-being of the people and for their habits that the consumption of beer has doubled in the last five years, while the consumption of spirits has decreased some three million gallons. Of the European countries, France is now our largest customer for beer. In 1864 she took 9,000 barrels. Russia, Belgium, Hamburg, or any other country in Europe, does not take half this amount. Since the French treaty, therefore, the shipments of British ale and beer to France seem to have doubled. In the last three years our shipments of ale and beer have increased in value a quarter of a million. In 1863 our exports of beer were 491,631 barrels; in 1865, 561,366 barrels; and in the first half of the present year they reached £335,791.

OPINIONS *versus* EXPERIMENTS.

We live, to quote a hackneyed phrase, "in the age of experimental philosophy," and therefore it behoves us, in every research after physical truth, or after improvement in any branch of farm practice, to be upon our guard against *pseudo-experimentalism*, into which fallen humanity is so prone to fall. Indeed, it may truly be said that the most talented farmer cannot report, granting that he could perform an experiment with perfect accuracy in any branch of his profession; so that in reality truth is the exception and fallacy the rule in every case of experimental inquiry. In other words, the practical evidence which experiments afford is only as yet an approximation to physical truth, and therefore the greatest degree of caution is necessary to be preserved in order to keep the wheel of progress out of the ditch.

Since impossibilities were drummed out of the field and farmyard, all sorts of novelty have become the ruling passion. So thoroughly is this the case, that the oft-quoted maxim, "*Rusticus expectat dum defluat amnis,*" no longer applies to the oldest of the old school now in the field, without less or more pruning, for all are experimenting without an exception. Who, for example, in modern times doubts the potent efficacy of guano, the advantage of drainage, or the benefits arising from improved implements and live stock? Where is the farmer who is not experimenting in each of these divisions of farm practice? and how few are there who are not striving to make advances in them all?

Thus far everything is highly satisfactory, generally speaking. So long as the eye takes in the whole survey, all appear in bustling animation in the race of progress. It is only when we advance to the front of the battle, that the lines are seen to be broken—some in their haste to go-a-head having diverged tangentially to the right or left; others having made a stand on elevated ground mistaken for the top of old Parnassus, and so on. But for all this, the coach is nevertheless slowly progressing onwards in the march of improvement.

The scene at the present time is an interesting one, from whatever point of the compass it may be viewed. It may truly be compared to a military campaign, in which the native army is retreating reluctantly before a more powerful invading force of arms—the former, representing the difficulties that lie lurking in the way of the pioneers of the latter, often making them retrace their incautious footsteps backwards somewhat hastily in a retrograde direction; and, although this skirmishing is bloodless, it is nevertheless carried on at a heavy sacrifice of men and money. All this is so manifest that we may leave our readers to work out the details at their leisure.

But proceeding a step further, it is very problematical if farmers generally are sufficiently thankful for the sacrifices annually made by the pioneers of progress. Indeed, naked thanks, however profuse, are of themselves insufficient to keep the wheels in grease; hence the scheming on the part of the pioneers by putting an extra price upon novelty, so as to raise the needful at the expense of those who gain the benefits of their labours—*i. e.*, the agricultural body generally—and the shyness with which so many of this body accordingly shun the front of the battle-ground.

Much of this delay to purchase new things arises more from the pseudo-opinions with which they are introduced than from the extra money put upon them to cover the extra expense in bringing them out. There is also a certain degree of imperfection in all new things, inseparately connected with the effects they produce, that stands in the way of their immediate adoption. New implements, for example, have always certain short-comings, so have new artificial manures and improved breeds of cattle; but by a severe course of training in performing experiments with these new implements, manures, and improved breeds of cattle, their owners are enabled to cover their respective short-comings, if not wholly, to a very great extent, and thus get rid of them for more money than they otherwise would do were all their faults, and the pseudo-practices with which they are covered plainly pointed out to purchasers. It is, according to the very nature of things, humanly speaking, so to do, and therefore the inventor and seller cannot be blamed very strongly for it. But, nevertheless, it stands greatly in the way of the general adoption of new things; for although a few are ever ready to catch at novelty, for reasons best known to themselves, the great body of intelligent farmers—those who in reality control the march of improvement, see the short-comings on both sides, more especially the pseudo-practice in showing them off to advantage, and thus delay purchasing until their true merits are exemplified in trustworthy hands, and what is ofter worse for the introduction of these new things is when they fall into hands who at first do not do them justice.

We have here two extremes, and it were difficult to say which were the most objectionable in the estimation of those not wholly competent to judge for themselves as to the merits of the novelty in question apart from actual experiment. This is more especially the case in revolutionary changes, as at the first introduction of thrashing machines, reaping machines, steam ploughs, artificial manures, feeding materials for live stock, improved breeds of cattle, and kinds of plants, either as food for man or beast, or for manufacturing and commercial purposes. The reason of this is obvious; for in these, farmers have no experience; consequently they have to serve an apprenticeship in learning how to use them successfully. And this too is not all, for unless the farmer himself is a thoroughly practical man and serves the apprenticeship himself, he is much at the mercy of his servants, as no little of the success, or it may be failure, will depend upon their skill. We have had hands, for example, who could never learn to feed and take the control of a thrashing machine. On the contrary, we have had hands who made good work when the machine from fair tear-and-wear was not in proper working-order It follows that had the thrashing-machine when first introduced fallen into the hands of the former, it would have been a bad machine, but in those of the latter a good one, not according to its own intrinsic merits, but according to the skill and talents of the workmen. If the machine is a good one, but falls into bad hands at this peculiar work, it will nevertheless be pronounced a failure. At every other species of work upon the farm the hands may excel, and yet be blockheads at thrashing; and as neither they nor their employers have any experience in the matter, their unfitness for the peculiar employment requires time and a change of hands to make the discovery. On the other hand, if the machine is a bad one, but the hands have a talent for the peculiar manipulation in working it, they may after a lesson or two make good work, when the bad machine will be pronounced a good one. Reaping machines, steam-ploughs, and all other new implements involving an entire change of manipulation are similarly situated when first introduced. Again, in the case of manures, it is a well-known fact to all practical farmers of any experience, that if two sets of hands are employed, the one good and the other bad, harvest results will be very different from the same quality of manure. It is an equally well authenticated fact, that a diversity of soil, season, climate, and the like, affects the productive results of manures as much if not more than a diversity of workmanship in their application. In the case of stock management, two cattle-men, the one a good hand and the other a bad, may go to the same turnip-bin and haystack and give equal quantities daily, and yet it is a well-established fact that the results are invariably very different, being always in favour of the good hand. Indeed, it often happens that cattle in the charge of a good cattle-man do better on inferior keep than do others under a bad cattleman on superior keep, and the reason is too self-evident to require exposition.

Such being the tacts of the case, is it surprising that intelligent practical farmers should look upon high-flying experiments, if we may use the phrase, with anything else than a cautious eye? The contrary would be something more than wonderful in their estimation. At the same time, neither they nor those who introduce new things have any other alternative than an appeal to experiment for a practical decision as to their merits. And what is more, the latter are in duty bound to make the most of their novelties which they possibly can, before they are able to ascertain practically what they are really worth, and how they may be improved so as to obviate existing shortcomings. With all this both parties are familiar, and as both have their eyes open to their respective interests, it would rather be uncharitable to designate the best and most leverly performed practice with the rather opprobious epithet f pseudo-experimentalism; for this designation obviously belongs to those who imagine they have got to the top of Parnassus, *i. e.*, the height of perfection, and who consequently onclude that their experiments should prove or unprove, as he case may be, those of everbody else, but whose experiments re nevertheless faulty to a proverb in the estimation of all ho are qualified to determine the facts of the case in accordnce with the established laws of physical science. Between e pioneer of progress and such an experimentalist there is ardly a legitimate comparison to be drawn; for the former in duty bound to do his best, simply because the e was never done before to the best of his knowledge hereas the latter lies under no such obligation, whether his nclusions are in favour or against the novelty. In other rds, if his experiment is unfavourable, the facts of the case e likely to prove that he has a lesson to learn of the pioneer fore he gets up alongside of him in the march of improvent; but if the contrary, then the pioneer may learn a lesson him, for it is an established law in physical science that ry experiment must stand upon its own feet, and therefore t one experiment can never overthrow or refute another. the pioneer gives a false report of his experiment, then so as is false may be refuted, but the experiment itself remains tly as it was performed; for the facts of the case, or ysical truths, cannot be overthrown. If the pioneer or intor, say of a steam-plough, for example, has got a superior d, whose equal has not, up to the date of the experiment, n found, that is as much a physical fact as any mechanical uliarity in the construction of his steam-plough upon which intrinsic merits may depend; and so, on the other hand, if pseudo-experimentalist has got an inferior or superior d, the fact has its own exposition, as the case may be; but oes not interfere with or in the slightest degree affect the s of the case on the other side, or in any other experiment. point of fact, pseudo-experimentalism is the misrepresenta of facts or physical truth, either on the one side or the er, or both. If, therefore, the inventor of the thrashingchine, reaping-machine, steam-plough, or artificial manure, ibutes to his invention what partly or wholly belongs to his , he is doubtless guilty, but at the bar of charity he is in e measure excusable. That, however, does not in the llest degree lessen the caution with which the practical ner requires to determine for himself the facts of the case oth sides, so as to arrive at a satisfactory and safe conion.

here is another class of experimentalists who have an inst in keeping themselves continually in the eyes of farmers before the general public; in other words, crack-farming become of late a very successful method of advertising ures, papier mâché, patent implements, &c. We were once offered £500 a-year to undertake an affair of this kind, and the offer was evidently so framed that if we had asked twice the money, the agreement would have been closed, and the work entered upon with every promise of success; but fortunately, or unfortuately, we have never been able even to countenance this method of advertising, or any method of blowing chaff in the eyes of the farmer, even although there was an abundance of clean corn into the bargain for his money. At the same time, the crack-farming to which we refer has done, and is still doing, an immense amount of good, and therefore we wish it every success, so far as progress in agriculture is concerned; and as farmers generally make leeway in chemistry, physiology, and mechanics, they will become better able to distinguish between chaff and clean corn, and what they should actually get for their money. Indeed, under a retrospective view of the matter, we might instance some intelligent successful practical men who acknowledge having visited several of these crack farms to their advantage, having gained information on many minor points of detail. According to the poet—

"Losses and crosses
Are blessings in disguise;"

so, in like manner, experimental failures often read an instructive, useful lesson to successful practical men. There may be a difficulty at times in determining to which of two sources a failure is to be traced; but when this is clear, then the conclusion from failures and successes put together is manifest; for, to show the former and adopt the latter becomes the practical rule for future guidance. And besides direct and indirect information of this kind, this same crack-farming visitations and controversy in the columns of the agricultural press kindle a spirit of discussion and inquiry, that never fails to awaken many more than drowsy people, and thus lead to farther progress.

It is not, therefore, from the experiments themselves that opposition to the progress of improvement arises, but from fallaciously attributing to one physical cause what belongs to another: in other words, the detailed reports of these experiments, given in lectures, in books, &c., do not give a faithful exposition of all the facts of the case; and this method of reporting prevails at the present time to a very reprehensible extent. This arises from conclusions being based upon opinion instead of upon fact—a method not only unpardonable when examined in its own lights, but that is wholly excluded, as incompatible with physical science and the experimental philosophy of the present age. It is neither more nor less than a futile attempt to re-introduce the discarded, objectionable, opiniative philosophy of the old school, when teachers knew everything, and the taught, nothing—when all blanks in physical science were, as a matter of course, filled up with opinions. It cannot fail, however, to prove a very futile attempt. No doubt, there is a large number of landowners and tenants who are still allowing themselves to be guided by the opinions of those who have acquired a leading position, as their forefathers did in the olden time; but the more intelligent begin to snap their fingers in the face of this false and rejected philosophy, with a significance that cannot be mistaken; for, when they come to the blanks, the wanting facts or links required to complete the chain must be discovered, and individually brought to light, before they can allow themselves to proceed farther. In this, they have a well-founded, practical reason, for they both see and feel that this pseudo-opiniative method of teaching is diametrically opposed to experimental inquiry in accordance with the established laws of physical science. This antiquated opinionative philosophy is more prevalent in agricultural chemistry and physiology, animal and vegetable, than in agricultural mechanics. At the same time, it is by no means an exception in the latter; for what is justly due to workmen—to bad hands as well as to good hands—is very largely being attributed to machines. It is, however, in the former—animal and vegetable chemistry and physiology—that most harm is being done by this pseudo-experimentalism in the laboratory, and opinionative teaching in the class-room and elsewhere; and the obstruction which it is giving to analytical inquiry in search of the innumerable proximate principles, animal and vegetable, not yet discovered is incredible. And this is not the worst view of the case; for, were the harm done of a negative character only, it would not be a great stretch of charity to consider it pardonable. But when our pseudo-teachers know that their experiments are incomplete, their conduct in reporting the contrary is very different. And so long as we do not know what the proximate principles not yet discovered are, how can we tell the functions which they perform in the animal and vegetable kingdom? The oft-quoted motto of the Royal Agricultural Society, "Practice with science," imperatively demands that the proximate principles themselves shall be discovered, before an opinion is expressed as to what their function is either in animal or vegetable physiology.

QUEEN'S COUNTY AGRICULTURAL SOCIETY'S ANNUAL SHOW.

The Queen's County Agricultural Society held their annual show at Maryborough. It was the best county show we have yet attended, with the exception of Cork, particularly in sheep.

In the section of yearling short-horned bulls there were eight entries, seven of which came forward, when Mr. Talbot, Grennan House, Castle Durrow, bore away the prize with his beautiful bull British, bred by the Earl of Mayo, by British Flag. His second was Mr. Cosby's white bull Reveller, bred by himself, by the celebrated Dr. M'Hale, out of Iva by Uncle Tom.

In the two years old, Colonel Fisher had a walk over with his very serviceable Roseberry (22,757), from the Westland herd, by The Druid, out a Doctor M'Hale dam.

In the class for aged bulls there were two entries, Mr. Cosby's Ravenswood, from Mr. Crosbie's herd at Ardfert Abbey; the other was Sir Charles H. Coote's Duke of Bedford, bred by Mr. Barton, of Straffan; by Hayman, out of Moonshade. But Ravenswood not only led off, but took the Cosby Cup as the best-bred prize bull in the yard, and consequently the R.A.S. medal.

In yearling heifers there were six entries, Colonel Fisher taking both first and second prizes for Rhoda 8th and Balm respectively, both by Koh-i-Noor (20,001), the former out of Rhoda by Gainford 4th (11,501), the latter out of Lavender by Sir Harvey (13,733). Mr. W. Roe, Newpark, was commended for Picotee.

In two years old heifers there were three entries, Colonel Fisher again taking the lead with Rhoda 7th, a full sister of the yearling prize heifer, Mr. M. H. Franks occupying the second place with Starch 13th, a half-sister of the first prize, by Koh-i-Noor out of Starch 8th.

In cows or heifers in calf, or having had a calf within six months, Colonel Fisher bore away both first and second honours with Golden Ray and Golden Arch respectively, from the herd of Mr. Torr, Aylesby Manor, both out of the same dam, Golden Halo; the first by Booth Royal, and the second by The Druid. He also got a H. C. for his very fine cow Pine Apple, from the herd of Mr. Stratton; Mr. W. Roe being commended for a fine cow, Birthday, bred by Colonel Fisher.

In weanling bull calves—six entries—Col. Fisher was first with Raspberry; Mr. J. Riddell, Gurteenahilla, second with Prince Teck; Mr. L. H. Bland got a H. C. for Comte de Lothian, and a commendation for Fitzharbinger.

In weanling heifer calves—four entries—Colonel Fisher took first and second prizes with Golden Drop, out of Golden Halo, and Golden Gem, out of Golden Ray respectively; Mr. Bland getting a commendation for Countess de Offally.

The show of sheep was most excellent, and in many instances far superior to other shows held in this country, and in numbers far over them. There were rams and ewe-lambs shown by Mr. Seymour Mowbray and Colonel Fisher, of the pure Leicester type, that were worthy of a prize at any show.

Messrs. M'Culloch and MacLachlan have spared neither trouble nor expense in producing first-class Border Leicesters; and this remark equally applies to Lord de Vesci, Mr. Franks, and Mr. Bland, the latter gentleman having obtained 35 gs. for a hogget-ram; and although not his prize-taker, to our mind, was fully equal to him.

The pen of hogget-wethers, crossed by Border Leicesters on the Irish ewe, were really fine, and brought to great perfection. They were exhibited by Messrs. M'Culloch and MachLachlan, and were awarded the challenge-cup. The show of pigs was good, but not so large as could be wished. Horses were a good show in point of numbers, but their quality was scarcely beyond mediocrity.—*Abridged from the Irish Farmers' Gazette.*

THE GAME QUESTION.

At the meeting of the Strathbogie Farmers' Club, the DUKE of RICHMOND, upon his health being given, said: There is one question which I shall offer a very few words upon, and that is the subject of the game laws. There is no doubt, I think, that the game laws is a subject which has been made a handle on many occasions, and made to bear an odium which it does not deserve. I look upon the game laws very much in the same light as the "cat in the house." When anything is broken it is nobody that has done it; it is always laid at the door of the cat. I am not for a moment going to deny that, on properties where game, such as hares, rabbits, &c., are allowed to exist in any very great quantity, injury will not accrue from them; but I believe that, frequently, both in this country and in the south, they have been made the means, by unscrupulous agitators, of attempting to breed schism between the landlord and tenant. These men, who care no more for the farmers themselves than for the hares or rabbits which they see upon properties, yet nevertheless try to make the subject a vehicle for setting at variance the landlord and tenant. Many schemes have been propounded in various quarters for meeting the difficulties, some of them, I think, with some degree of fairness; to others I have the greatest objection. The one which crosses my mind at the present moment was one which appeared to me to be of a most preposterous character, viz., that no agreement made between a landlord and his tenant on the subject of game should be a legal one. That appeared to me to be an interference with the liberty of the subject, and the discretion both of landlord and tenant, which has rarely been equalled, and certainly never surpassed; and to my mind it simply meant one thing, viz., that the tenant was a fool, and the landlord was a rogue, because, if not, surely a landlord and his tenant may be allowed to make any agreement they please in the matter. I am of opinion that these matters are better left to the discretion of both parties, and that, if there is a good feeling, such a feeling as ought to exist between landlord and tenant, no very great harm can accrue in the great majority of instances. I do not mean to say that there may not be property on which the game may do a great deal of mischief, but, in the great majority of cases, I believe this is not the case, and I certainly hope and believe it is not so on the Gordon property. All I can say is, that, if it is so, it is not wi my wish; and I may add that, during the periodical ri which I take in the various parts of my property, up to t time at all events, no complaints have been made to me that head. When I mention the rides which I take thro the country, I think it of the utmost importance for the la lord to do so, because it enables him to see the various i provements which have been made since his last visit, and become acquainted with the faces of his tenantry, and wi the faces of their families. It enables him to take a mo peculiar interest in all that belongs to them than he can p sibly do if he sits at home and never looks near any one of t houses. It also has the effect of inducing tenants, if t think that their landlord is coming round, to give the plac brush-up, and everything is put up, for a time at least, i apple-pie order. It fosters that good feeling which ought exist between landlord and tenant, and which, in my case venture to think always has existed. In these days, whe is the fashion too much to set class against class, it is an cellent plan for the landlord to take regular rides thro amongst his tenantry, to make all their affairs his affairs, to bound up with them in all that conduces to their welfare, a to feel that everything which may affect them injuriously, a through them affects him. I think it forms a very stro link in that very large chain of society in getting all classes come together, and in making the landlord and the tenant believe that they have all a common interest, and are memb of the same body. That is the manner in which I have e deavoured to associate with my tenantry up to this time, b cause I have felt it was only my duty, as it has always be my pleasure, to follow in the footsteps of my father, and carry out in all matters those things which he would hims have done if spared.

SIR WILLIAM FORBES, at the Leochel-Cushnie Society meeting, said: I do not know if there is much trouble fr hares and rabbits here. The folks sometimes say they have " curn" of them; and one man told me he had the whole of crop eaten down with them; but when I came to look at it, was not brairded even. He possibly meant that it would be eaten down thereafter, and that is highly probable. Well, I would wish clearly to express my opinion—I cannot say for this year, because I am not staying in this country, and cannot look after things so well as if I were; but next year I may say, so far as the tenantry of Craigievar are concerned, that permission to protect themselves from ground game will be afforded. Few people seem to understand that, by the proper reading of the law, such a thing is accorded. It has always been left as a matter of mutual agreement between landlord and tenant. However, next year when I come down and talk of that there will be no difficulty in arranging that little affair, for a little affair I consider to be in this quarter. We in this corner do not go in for the last corner of the bag; for, sportsman as I am, and fond of shooting as I am, I would not have one of my tennnts to suffer in that way for anything. As for rabbits, I will not say that rabbit-shooting is not good sport; it is the very best of sport in its way, and requires a good shot to have success at it. But the one thing above all others that I do like is a shot at a partridge. It was one of the peculiarities of my father that he gave little boys rewards for looking after and protecting "pairtrick's" nests. We may do so again; but, however that may be, the game question is one that need not cause the slightest uneasiness to any tenant on the estate of Craigievar.

BISCATHORPE RAM LETTING.

This annual meeting again passed off on August 30th with the great success for which it has long been celebrated. In nsequence of the uncertain state of the weather and the nxiety which is felt about the harvest, there were not so many present who would have come to accept Mr. Kirkham's nvitation merely for the purpose of enjoying the social pleasures of such a day, but all the long-woolled ram-breeders of ny note from far and near were there, and every one who meant business of a less distinguished, but not less important kind, turned up as usual. Knives and forks for 250 were laid n an outbuilding, which was fitted up, and decorated with lowers, evergreens, flags, and appropriate mottoes, for the reeption of visitors to the luncheon; but 60 more of the comany had to adjourn to the house to obtain refreshment. Mr. irkham was supported by a number of clergymen and gentleen of the neighbourhood, and the speechifying was generally f the spirited character which we have been in the abit of hearing on this "field day" at Biscathorpe. Towards e end, however, of this agreeable hour, and when the health f the trustees of the estate was proposed, it was publicly nounced that it was anticipated and feared that this would e the last similar meeting at this widely-renowned place in nnection with long-woolled ram breeding. This naturally used a considerable amount of depression among the comny, as but few persons were previously acquainted with this ssible, not to say probable, result. The Biscathorpe prorty is undergoing the process of being handed over by its st trustees to its rightful heir, who is now about the specid age for it to pass into his full possession. After the luneon, however, we heard it repeatedly given as an opinion at the young gentleman who is the fortunate heir to this rm, made so celebrated by Mr. Kirkham's taste, skill, and dgment, would never dispossess so good a tenant merely r the sake of the house and its situation and beauties, developed by Mr. Kirkham and his family, but that, his tastes and training are not of an agriculral character, he would adapt his own residence se by to whatever desires and wishes he may have. We rtainly hope this opinion will be realized, as it would be a urce of general regret if the character of the Biscathorpe nagement were to be sacrificed, and the farm fall into an -hand business, or be left to the mere common-place management of a bailiff. The wish is frequently father to the thought; d here we must admit there is a strong incentive to a conusion without stopping to inquire into the grounds on which is based; and from what we have seen of Biscathorpe, and ard of the esteem in which its present tenant is held, and of e admiration which is generally accorded to it from an agriltural point of view, we must confess we are inclined to hope th confidence that the great good feeling expressed by the nior trustee towards their tenant, in response to the above toast, will be practically respected. This much we may say with certainty; nothing would tend more to popularise the gentleman who will now have the right to decide the fate of Biscathorpe as an agricultural business, than for him to show his appreciation of modern agriculture by renewing, as his first business-act, Mr. Thomas Kirkham's tenure of occupation.

The letting on Thursday was of a most satisfactory character. The 80 shearlings let for £1,337, or at an average of £16 14s. 3d. each. The 26 two-shear sheep let for £376, or about £14 10s. each, and the 44 three-shear and upwards let for £1,283, or at an average of £29 3s. odd each. The aggregate amount for the 150 rams was £2,620, or a general average of £17 9s. 4d. each.

The whole of the sheep came to the ring with that active, buoyant style of moving, and blooming appearance of wool, which Mr. Kirkham always has excelled in when we have attended his public lettings. These appearances other long-woolled breeders have endeavoured to produce, and many of them have attained to a fair measure of success, but by no one else have they as yet been equalled. It is to these results, in addition to the great size and substance, with good form, of the majority of the Biscathorpe rams, that we must account for the above great prices for so many sheep from one flock.

The leading hirers of sheep, with the individual prices made, were, to take them as they come, Mr. Richardson, who took No. 6, at £31 10s.; Mr. Caldwell, No. 8, at £90; Mr. Langdale, No. 9, at £40; Mr. Iles, No. 26, at £28; Mr. R. C. Howard, No. 27, at £30; Mr. Sowerby, No. 39, at £25; Mr. Brice, No. 44, at £44; Mr. E. Paddison, No. 49, at £40; Mr. Richardson took another, No. 76, at £26; and Mr. Salter, of Attleborough Hall, took four of these shearlings at the following respective prices: £20, £24, £21, and £22. Here we may remark the critical notes we made last year from Temple Bruer have met with considerable attention, and we had the satisfaction of seeing that form and weight of flesh are beginning already to be looked upon with that respect, and as of that importance, which we then said were their due. The more we see the more we are assured that the views we urged are correct in principle, and, therefore, must be practised sooner or later more closely than they have been since the rise in the price of mutton, and particularly of wool. To attempt to bring the whole flock up to the size of a few large sheep, which may be termed offshoots, is a vain struggle after notoriety and a sensational profit: it is an endeavour that must break down. To get at a full and fair estimate of the progress and promise of the particular breed of sheep of a district or country, the rams which are brought before the public must not alone be examined and reckoned up. We have gone through the ewes of farms, watched them walking in the fields, and along the roads to or from markets and fairs, and the loose slouching walk is becoming far more prevalent than it ought to be. Young sheep even don't lift their hind feet off the ground. Their legs stand, or hang, inclining backwards; and as they move, their toes drag on the ground after them, till they are ground off to a blunt irregular flat that will admit of the term (at least for the aged ones) of "old square-toes." We have some more observations to note on this subject, but our space compels us to defer them till next week, when we hope to have some further remarks to make from Owersby, Aylesby, Temple Bruer, and elsewhere.

The two-shear sheep here do not, from some cause, make prices proportionate to the younger and older sheep. The highest price in this class was taken by Mr. Grime at £26; Mr. Norfolk took one at £18; Mr. Needham one at £20; Mr. Ripon another at £20; and Mr. Gilliat and Mr. George Nelson one each at £22.

The older sheep were certainly the finest lot of animals we ever saw together, and they fully merited the close inspection and admiration which they received at the hands of all the leading long-woolled breeders who were present. The first one offered, No. 107, was taken at 100 gs. by Mr. Aveling, a nephew of Captain Cattlin, for the flock of the latter. Captain Cattlin hired this sheep, as a shearling, at £160; last year he was let at £135: thus this sheep has already realized £390, with the prospect of again returning to Mr. Kirkham, for re-letting. No. 108 was taken by Mr. Joseph Kirkham, at £50; No. 109, by Mr. Davy, of Owersby, at £70; No. 110, by Mr. Mumford, of Credenhill, Herefordshire, at £35; Mr. Iales, near Great Grimsby, took No. 119, at £50, for his excel-ent ram-breeding flock; Mr. Williams, of Carlton-le-Moorland, took No. 122, at £30; Mr. Chatterton, of Southside, took an old favourite of seven years of age for the second time, and now at £52 10s.! This sheep has earned a great deal of money, but we have not the items; and he is now in such good "fettle" that Mr. Chatterton is confident of his doing duty this season for a hundred ewes.

MESSRS. SALTER'S RAM SALE.

The Messrs. Salter continue their flock of Improved Lincolns in the drier climate of Norfolk. At present there does not seem to be any degeneration in the character of either mutton or wool: indeed, considering that this flock has been devoted, up to this time, to exclusively breeding male sheep for getting stores, and therefore that so much consideration in selection or discarding plainer lambs and sheep has not been practised, the better points of the character of the Lincolns as they appear on their own ground have here been well preserved. Five years ago this flock was begun with 50 ewes, from Mr. Kirkham's and other renowned flocks. Now these number a flock of 300 ewes, which is a rapidity of increase that is well calculated to test the adaptability of the long-wools for situations beyond the Lincolnshire Wolds. Of course there is a constant introduction of fresh blood. For example: last year Mr. Salter hired two rams from Biscathorpe, and on Thursday last he hired four for use this year.

About the success attending the issue of the rams from this flock and breed, when they are used for crossing on the dark-faced Norfolk ewes, there is now no question, for the speckled-faced lambs shown at Norfolk markets and fairs combine the modern requirements of increased size and heavier fleeces, with the capacity of maturing early, if this latter advantage be required, or the yield of food should make it practicable and convenient.

The practice of folding roots on stubbles, and growing mangolds, swedes, and spring turnips afterwards on one furrow, as described in the *Mark Lane Express* in the spring of last year, is still pursued by the Messrs. Salter. This system we spoke of as a great saving of labour in hauling, besides being one which is advantageous in the droppings of the animals consuming the green food of the farm falling on the soil at once. By this a chemical action is produced, which is highly beneficial, promoting that disintegration of the soil, without which any amount of mechanical action on the soil is comparatively valueless. The present crop of roots amply testify to the correctness in principle of this system. Mangold, swedes, and turnips are in admirable trim. All this, however, is plain sailing that any farmer can understand. But there is in one field an instructive result which occurred without design. A field was intended partly for mangold and partly for swedes. The side for mangold was ploughed first, but the day's work extended beyond the limit set down for that crop. The remainder of the field was not ploughed for three weeks, consequently when the field was sown there was a small piece of stale ploughed land, and the remainder, the bulk of it, was fresh ploughed. On the piece of old ploughing the swedes have grown well throughout, but on the newly-ploughed part the roots have not thriven equally well. This shows that deep ploughing should always be done some time before it is intended to sow a crop. For wheat, it may be remarked at this season, a deep furrow should never be turned, and for root crops even it should be done well beforehand. When forest soil is turned up and exposed to the atmosphere, a large amount of mineral matters is reduced to a soluble form. If plants be sown subsequently, the food they imbibe is so largely charged with mineral matters that they become purged, as it may be termed, and either die off at once, or make but little progress. In the case of wheat this effect is wrongly attributed to want of solidity; but the real cause is an excess of mineral over carbonaceous or decomposing vegetable food.

In regard to the business of August 30th, a large company gathered around the Messrs. Salter's tables, and subsequently entered into spirited competition around the ring. The first thirty sheep averaged £12 10s. Mr. Lock bought one at £20 10s.; Mr. Turner another for the Marquis of Bristol at £18; Mr. Jury, of Westley, Cambridgeshire, a third at £18 10s.; and Mr. Webb, brother to the late breeder at Babraham, three for store-breeding at £8 10s., £9, and 10
These sheep, as they become known, are becoming gre
favourites for this purpose in Mr. Webb's part of Cambridg
shire. The weight of Mr. Lock's purchase, which was in sto
condition only, was a little over 20 stone of 14lbs. live weig
The lambs were let at prices ranging from £3 10s. to £7 5s.

We omitted to mention that the Messrs. Salter's crop
beans and rape are again worth consideration. This crop
taken in the place of clover on land that is clover-sick, inste
of a crop of pulse for harvesting. It is not required to
strong, therefore no manure is applied. Two bushels per ac
of beans were sown twenty-four inches apart the latter part
March or beginning of April, and after the last horse-hoeing,
month or so ago, a row of rape was drilled between each row
beans. These are now in good order to begin: the beans
just beginning to turn, and the rape is getting from 6 to
inches high. The value for feeding put on this crop is £5
£6 per acre, and the advantage that is derived from it, by t
way it puts the ewe in condition for the winter, and from t
excellent manner in which the land is thus prepared for whe
at no outlay, induce the Messrs. Salter to put a high value o
this practice. From what we saw of the condition of the
last year on the autumn grass, and of the wheat this year, wh
followed the folding off of a similar crop, we are certain
greatly inclined to indorse their favourable opinion of th
practice.

THURLSBY GRANGE SALE.

Mr. Kemp has been in the habit of sending 40 or 50 ra
to Lincoln September Fair. This year, however, the b
order compelled him to call a sale at home. The result ma
clearly manifest the difficulty which the breeders of the
small lots now have to encounter. Most of these sheep ha
hitherto been bought by ones and twos to go to distant pa
of the country. The buyers of these generally prefer to ha
one or two from several flocks; where therefore there was
general meeting on a fixed day at a central town, the com
tition was more in accordance with the numbers offered.
the present situation of the harvest, too, Norfolk, Cambrid
and other eastern counties men cannot afford to waste a
and a-half or two days to go to a small sale, on the chance
finding one or two suitable sheep out of the eight or ten th
may want. One good sheep made £30, another made £
another £18, but most of the remainder sold made little mo
than the upset price of £5; while a large number were pass
through the ring without a bid, notwithstanding that M
Mason, jun., displayed great energy in attempting to exc
the spirits of the few buyers present.

SHEEP AND STOCK SALES IN SEPTEMBER.

WOLD NEWTON RAM SALE.

Messrs. Unson and Son offered 61 shearlings for Messrs. W
and R. J. P. Iles on the 6th September, and they were sold f
the sum of £550 5s.; No. 7 made £15 10s.; No. 8, £14
No. 9, £15 10s.; No. 10 was purchased by Mr. Waddingha
of South Ferriby, near Barton-on-Humber, for £27; No
12, by Mr. Bygott, of the Glebe Farm, Barton-on-Humbe
for £17 10s.; No. 33, by Mr. Richardson, of Limber, for £31
and another, by Mr. Taylor, Farley Farm, Luton, Beds, fo
£15 10s. The reputation of this flock, and the spirit and
judgment which the Messrs. Iles have recently displayed, a
particularly this year, in securing sheep of fine form and quality, augur well for the sheep they are endeavouring to produ

THE LAUGHTON RAM SALE.

We were somewhat taken by surprise by the show of 10
sheep here on Monday, September 10, we have spoken in their praise when we have seen the 50 or 60 specimens which have hitherto been taken to Peterborough fair. Previous to the last four years Mr. J. R. Casswell had an annual meeting at home; but it was then thought to be more advantageous to take the sheep to a central meeting instead of inviting friends to come to a farm which, in these days, is considered to be an out-of-the-way place across country, as it is 8 miles from Bourne and

1 miles from Sleaford, the two more convenient railway staions. The result of Monday's sale, however, placed Mr. Casswell in a position for being thankful to the Lords of the Privy Council, through their Orders compelling him to advertise his ale at home. As a thoroughly useful lot of sheep, this flock ertainly stands well. There may not have been so many am-breeders' sheep among those offered as have been presnted from some other flocks; but for form, substance, and uality of mutton, as well as for quantity and fineness of wool, hese sheep are very good.

From the number of customers from distant counties it is lear these sheep have made an impression at Peterborough, s well as on the flocks of the practical men who there bought ne or more of them. From Yorkshire there were Messrs. Copeman, Staveley, Gordon, Gibbs, and Trotter; the latter eing agent to Lord Zetland. From Essex there were Messrs. craggs and King; from Worcestershire, Messrs. Harris and asswell; from Herefordshire, Messrs. Eastland, Downing, d Morris; from Huntingdonshire, Northampton, and utland, Messrs. Waggstaff, Bowyer, Hill, Cliff, Moore, ttenborn, Brown, Thompson, Smith, and Brown. The incolnshire men also mustered strongly, among whom ere Mr. J. C. Lawrence, who presided at the luncheon; the ev. G. Carter and Mr. Henry Smith, who officiated in signing ders for the removal of the sheep; and Messrs. Robert Parr, mond, Thomas Casswell, C. Clarke (Ashby), W. Parke raggiethorpe), C. Tonge, J. Olive, S. Smith, G. Willows, d T. Sneath.

The average of the fifty sheep, which would have gone to eterborough fair had not the holding of the fair been doubtful, s £17 each, the total being £850. As, however, the sale s necessarily called for Langton, all the sheep that could be own to make up the hundred were brought out, and one of se was seven years old. The whole of them were disposed ; and there would have been customers for many more if ey had been present. The total made of the whole was the od one of £3,165 10s., or within a penny of 13 guineas ch. No. 14 was bought by Mr. Garne, of Willoughby, at 7; and No. 17, by Mr. Tom Casswell, of Pointon, at 7. The 100-guinea sheep, for which Mr. Clarke bid a ndred pounds, was greatly admired by the large company of actical men on the ground.

THE AUDLEBY SALE.

Mr. Kirkham met with a decided success in showing his ms for the first time on his own ground near Caistor. The ms from this flock have hitherto gone to Peterborough fair; t Mr. Kirkham accepted the Government orders cheerfully, d determined to begin an annual meeting at Audleby, that might have the opportunity of inviting his friends and securing their attendance in a collective form once a year. The mpany on Wednesday was not so numerous as we have seen some other meetings, but there were only 48 sheep shown; d, as these were generally of a finer character than ordinary ore-breeders purchase, there was not the attraction for this ss of buyers, which a larger number of sheep usually affords. he party, however, was select; for it was composed of the incipal ram-breeders in the county, and some of the larger rmers and best flockmasters of North Lincolnshire. The markable freshness and blooming appearance which generlly, indeed we may say always, belong to the Kirkham eep were here well preserved. There were 34 shearlings and older sheep sold; and the average of the former was the od one of £16 8s. and some odd pence, and of the latter 12 16s. 3d. Among the leading buyers, Mr. Brice, of Risby, arket Rasen, bought No. 4 at £23. This is one of the eapest sheep we have seen this year; for his form was ficiently heavy, while it was compact and otherwise correct, s fleece was ample, and his quality generally good enough r anyone. No. 6 was also a capital sheep, and, as he turned t, if price be a test, the favourite of the day. He was ught at £50 for Sir Montague Cholmondley, of Easton all, near Stamford. No. 8 made £21, to Mr. Frankish, of ormanby-le-Wold; No. 13 made £30, and was bought go to Cadeby, for Mr. John W. Kirkham, whose first rivate gathering for the sale of a few sheep takes lace next week. No. 14 was also bought by Mr. rankish at £38; Mr. Iles, breeder, of Wold-Newton, ear Great Grimsby, bought No. 15 at £42; and Mr. Coatsorth, of Riby, bought No. 17 at £21. Audleby is two miles north of the ancient town of Caistor, and the farm (of about 1,000 acres) stretches from the top of the North Wold plateau, down the side of the somewhat abrupt slope at this spot, into the valley which expands thence towards Brigg and Gainsborough. This farm a few years since was in a poor condition, and much of it was covered with goss and ling; but under Mr. Kirkham's cultivation, and the high feeding which he has practised with his pedigree shorthorns and improved Lincolnshire sheep, that which was wild rabbit cover has become useful land, as well as a picturesque specimen of British agriculture.

MRS. BAKER'S SHROPSHIRES, AT GRENDON.—The four-shear ram, Nuneaton, which has beaten several Royal winners, was let for the season at fifteen guineas, and whilst seventeen guineas was the highest price obtained, the demand was good throughout, and the thirty-one averaged £11 2s. each, four being let, and one of those for a very short time only. The ewes were eagerly sought after at figures ranging from 60s. to 85s., the average for 100 being 72s.

MR. S. BYRD'S SHROPSHIRES, AT LEESE FARM.—The ram lambs were a good-looking lot, and although very low in condition, went off at fair prices, viz., from five to nine-and-a-half guineas each, the average being £7 1s. 6d. The rams commenced with Lord Weston, and this was let for the season at thirty guineas. The second ram was Model Patentee, retained last year for use at home for a portion of the season, and this was let to Mr. Allen, of Knightley, at forty-three guineas. One yearling was let to Mr. Wright at thirteen-and-a-half guineas, and the thirty-five others sold made from six-and-a-half to eighteen guineas each, averaging £13 5s. 6d. each.

MR. R. H. MASFEN'S SHROPSHIRES.—At the thirteenth sale of rams and ewes, Mr. Preece, of Shrewsbury, disposed of nearly fifty rams, and upwards of 100 ewes. Three of the rams were let for the season, realising seven, sixteen, and twenty-two guineas, and the remaining forty-four were sold at prices ranging from forty guineas (given by Mr. Williams, of Shropshire, for Exile) down to eight guineas, the average being £14 11s. 8d. The ewes made good prices, the highest figure being 90s., the lowest 60s., and the general average 71s. 6d.

THE SHREWSBURY AUTUMN SALE.—About 260 Shropshire rams, the property of various breeders of eminence, were brought to the hammer at Shrewsbury, by Mr. W. G. Preece. Five very useful rams, in store order, from Mr. Williams, of Albrightlee, sold readily at £11 each. A three-shear ram, bred by Mrs. Wadlow, though low in condition, brought thirty-five guineas. The Rev. C. P. Peter's rams made but ten guineas each. Mr. Evans's lot commenced with a two-shear, which had been let to the Smith Barry Trustees, at Cork, last year, and returned very late in spring, low in condition, was let for fourteen guineas. A good shearling followed at twenty-five, and others at eleven down to six-and-a-half guineas, the thirteen averaging £10 6s. Mr. Pryce Bowen had a fair sale at about ten guineas each; a level two-shear, bred by Mr. Minor, was sold at twenty-one guineas; Mr. Thornton's lot made £10 10s. each. Messrs. Crane's Colossus was purchased at twenty-five guineas, others of this lot making twenty-eight, twenty-five, and twenty-one guineas, and averageing £16 16s. Mr. H. Smith's were disposed of at £10 16s. per head. A two-shear in Mr. Horton's lot, by Duke of Kent, after keen competition, made fifty-one guineas for the season, to Mr. Dennis. A good yearling in this lot let at twenty-six guineas to Lady Willoughby de Broke, and the twelve averaged £16 14s. Mr. Meire's small lot made £9 16s. each, and Mr. Sheldon's £10 10s. exactly, one of the latter, letting at twenty-one guineas. Mr. Horley had two useful shearlings, one letting at seventeen guineas to Mr. Hudson, the other selling at sixteen to Mr. H. Smith. The ewes, numbering upwards of 2000, were sold on Wednesday, and fetched good prices, ranging from £3 to 8 guineas each.

LEICESTER RAMS AT MILL OF BOYNDIE.—The sale of rams the property of Henry A. Rannie, Esq., of Greenlaw, and tenant of Mill of Boyndie, was held at the latter place. Thirty-seven Leicester shearling tups were sold at an average of £5 5s. Sixty gimmers, three-parts Leicesters, fetched £106 15s., averaging £1 15s. 6d.

SALE AT GORDON CASTLE.—The annual sale of pure-bred Shorthorn cattle, Leicester tups, &c., the property of the Duke of Richmond, was held at the farm steading, Gordon

Castle. The Leicester and Southdown ewes and gimmers brought very fair prices. They were put up in lots of ten and five. The average price given for these might be struck at £2 10s. The bidding was very spirited for Leicester rams, and they were very speedily disposed of, some of them at very high prices. The average price per head for the tups was £4. The highest price given was £9 15s., while the lowest price was £2 10s. No animal was taken in unsold. Eleven short-horned bulls and bull-calves average twenty-nine guineas; ten cows and heifers averaged twenty-two guineas.

SALE OF LEICESTER SHEEP AT LITTLE KILDRUMMIE.—The demand for tups was not great, and several very fine animals were sold at somewhat low prices. Six shearling tups were struck out at an average of £5 each; and four two-year-olds averaged £4 4s. Six pure-bred gimmers averaged £2 15s. each. Eight two-year-old ewes averaged £3 11s., and eleven three-year-olds averaged £3 14s. There were also a few cross cast ewes sold for about 30s. each.

PETERBOROUGH RAM FAIR.—There were 281 rams penned by eleven breeders. Mr. Wm. Mann sold 30 rams for Mr. Cartwright, of Dunston Pillar, at an average of ten guineas per ram. Mr. James Warwick sold 30 for Mr. Topham, the highest prices realised being £30 for an animal sold to Mr. Mackinder, £19 for one sold to Mr. Croft, and £15 for one sold to Lord Sherard; the average of this lot was £11. Mr. Garner, of Willoughby Heath, showed 10 rams, which were sold by Mr. E. Law, the highest prices being 21 guineas for one sold to Mr. Webster, of Glinton, and 15 guineas for one sold to Mr. Marsh; average £10 15s. Mr. Hack showed nine, which were sold by Mr. Shouler, Mr. Sleath being the highest purchaser at £15 10s.; average £9. Mr. W. Kirkham's rams were sold by Mr. J. Fox; there were 40 of them, and the highest prices realised were £25 to Mr. Uffendale, £22 to Mr. Garner, and £21 to Mr. Howe; average £10. Mr. S. Kingston sold 17 for Mr. Lamming, the highest price being £11 15s. to Mr. Lovell. Mr. Fisher sold his rams by private contract, the highest price being £20.

RAM SALE IN DUBLIN.—Messrs. Ganly, Sons, and Parker held their fifth annual ram sale, in King's-bridge Park, when 450 highly-bred rams passed through the ring. The attendance from all parts of Ireland was numerous, and the biddings brisk and spirited. Border Leicesters were in the ascendant, and, as a class, brought the highest prices, with the exception of Mr. Flynn's long-woolled rams. Lord De Vesci, Mr. Franks, Mr. Bland, Messrs. M'Lachlan and M'Culloch, Mr. Riddell, and Mr. Young brought out their sheep in first-rate style. Mr. Mowbray's pure Leicesters, of the English type, did not bringt he prices they comparatively deserved, averaging but nearly 9 guineas; but this breed, with a little more size, will come into vogue again: we cannot do without them to cross with other breeds, amongst which, for years gone by, they have effected immense improvement. Mr. Eivers' Lincolns did pretty fairly, averaging nearly 9 guineas for 22; but Mr. C. Going fairly distanced him, his 10 Lincolns averaging over 15 guineas a piece, and the lot sold was but the third in order of merit of this breeder's flock, he having sold the first and second pick previously. Cotswolds were nowhere, and we were delighted to see the eight Roscommon rams of Mr. Flynn, of Tulsk, bring such high prices, averaging over 20½ guineas, which bears out our opinion, that it is scarcely possible to beat the Roscommon sheep in shape, size, hardiness, bone, thrift, or wool, when carefully selected and bred, as the Roscommon men know well how to do.—Abridged from the *Irish Farmers' Gazette*.

SALE OF SHROPSHIRE SHEEP IN IRELAND.—Mr. C. W. Hamilton's annual sale at Hamwood, near Dunboyne, was conducted by Mr. W. G. Preece, of Shrewsbury. A great company assembled, and high prices were realized. Fifty rams averaged £15 9s., and 150 ewes upwards of £3 each. The Marquis of Downshire purchased rams Nos. 5 and 10 at 28 gs. each. Mr. P. W. Bowen, of Shrawardine Castle, Salop, bought the noted old stock ram "Lord Warden" (bred by himself, and for which Mr. Hamilton paid Mr. Bowen 53 guineas), at 20 guineas, and Mr. Preece secured No. 25, a grand animal, for the Messrs. Crane, of Shrawardine, Salop, at 30 guineas.

THE ASPS RAM SALE.—Mr. Henry Mann has held his annual ram sale, which was well attended. The proprietor, however, on this occasion did not confine himself to the sale of rams, but also offered a large number of young stock ewes. The rams were superior in size, quality and form to any previous occasion, and the ewes also wer equal, if not better than any that have been offered for sale i the neighbourhood during the past season. The rams, whic were in prime working order, comprised 10 for letting, 24 fo sale, besides 80 young stock ewes for sale. The sale was con ducted Mr. Margetts. The rams that were let made from guineas to 18, and those sold made from 5 guineas to 10½ g each. The stock ewes realised from 55s. to 73s. 6d. per hea The following were among those present: Captain Nicholl Messrs. Layne, G. Stanley, Heath, J. Weston, Cattle, J. Ark wright, C. L. Whalley, R. Righton, Rigg, Johnson, Bulling Holyoake, Hawkes, T. Bradley, E. Mann, J. Glover, Walton J. Hynde, J. Haddon, Selby, W. Gaggard, C. Shaw, Frank lins, Home, Burberry, Fornby, E. Bate, Austin, T. Somer Over, W. Mann, T. Mann, W. Gaydon, Robbins, W. Ston Badger, Powell, &c., &c.

SALE OF RAMS AT BLEASBY.—Mr. Marriott ha held his annual ram sale, when 60 very superior long wool sheep were offered for sale by auction, by Mr. J. H Bradwell. The bidding was for some time very spirited and 20 rams quickly disposed of at an average of £13 15s The two best sheep realised £25 and £23 10s. respectively The total average of the sale, which was highly satisfactory was £91 4s. per head.

SALE AT BRANCHES PARK.—192 pure-bred Lincoln sheep, comprising 161 ewes and ewe lambs, 31 shearling rams and ram lambs, and 4 Shropshire Down rams, als 26 pigs and 19 pure Shorthorns, the property of Lady Pigot, were brought' to the hammer at the Home Farm, Cowlinge, by Mr. J. Carter Jonas. The first lot, a one-shear Lincoln ram, bred from the flocks of Mr. Kirkham, of Bies thorpe, and Mr Greatham, sold for £4 8s. Twenty-six othe similar lots were disposed of at sums ranging from £2 16s. t £3 12s. 6d. The Shropshire rams then came to the hammer with the following results: One-shear Down ram, sire bred by Mr. Sheldon, and brother to his prize sheep, dam from th stock of Lady Willoughby and Lord Aylesford, £4 4s. One shear Down ram (same sire, dam by one of Old Patentee's sons, a Royal first-prize sheep), £3 15s.; ditto £3, ditto £ 3s. Of the pigs, the boar known as the Duke of Wetherby was knocked down for £5, and the next lot, a boar pig, born September 4th, 1865 (by Duke of Wetherby, dam Lady An bred by the Countess of Chesterfield), for £3 10s. Two simila lots fetched each £3 12s. 6d., and two sow pigs of the sam litter £3 and 3 guineas each. The next five lots were sold a follows: Boar pig, born September 1865 (by Duke of Wetherby lot 54, dam Linda, by a boar bred by His Royal Highness th late Prince Consort), £3 7s. 6d., ditto £3 6s. Sow pigs o the same litter fetched £5 5s., £4 10s., and £4 respectively Four sow pigs were also sold at from 77s. to 66s. The highest prices fetched by the cows were—21½ guineas, Joan of Arc roan (calved December, 1854, by Mr. Booth's Vanguard 10,994); 25 guineas, Red Ringlet, red (bred by Mr. Booth calved December, 1855); 27 guineas, Rosebud, red and white (calved December, 1855); 30 guineas, Annette, roan (calved April, 1859, by Prince George, 16,735); 20 guineas, Adele, red roan (calved December 27th, 1865); 24 guineas, the Pi rate's Daughter, red (calved November, 1863, by Ravenspur 20,628); 20 guineas, Emma, roan (bred by Mr. J. Booth calved January, 1864, by Trojan Warrior, 20,992); and 31 guineas, Anna, roan (bred by Mr. J. Booth, calved April 1864, by Trojan Warrior, 20,992, April 2nd, by Ravenspur, 22,681).

SALE OF SHORTHORNS.—A sale of pedigree Shorthorn cattle took place at Middle Farm, Cumberland, when thirty-four cows and heifers, and fourteen bulls, the property of Mr. Hetherington of that place, were brought to the hammer by Mr. Strafford. The Nell Gwynne family gave eight females to the herd, which sold as follows:—Polly Gwynne, calved November 25, 1853, by Flying Dutchman, twenty-seven guineas; Rose Gwynne 2nd, by General Jackson, calved January 11, 1862, twenty-six guineas; Duchess Gwynne, by Duke of Wetherby, calved December 15, 1862, sixty guineas; Christmas Gwynne, by Wild Duke, calved December 25, 1865, seventeen guineas; Poll Gwynne 2nd, by Wild Duke, calved April 12, 1865, twenty-six guineas; Christmas Gwynne 2nd, by Duke of Cumberland, calved February 1866, forty guineas; Polly Gwynne 3rd, by Duke of Cumberland, calved May 13, 1866, thirty guineas; Rose Gwynne 4th, by Duke of Cumberland, calved June 22, 1866, twelve-and-a-half guineas; Wild Eyes 21st, thirty guineas; Wild Eyes 22nd, thirty-one guineas; Wild Eyes 24th, fifteen guineas. Mr. Foster, of Killhow, paid thirty-two guineas for Second Duchess of Oxford, calved August 1859; Mr. Brockbank, of Burgh, thirty-six guineas for Third Duchess of Oxford, calved June 1863; Mr. Higson, of Pendleton, Manchester, bought Rosebud 3rd, calved October 1863 for twenty-three guineas; Rosebud 4th, calved May 10, 1866, for thirteen guineas; and Western Belle, calved May 1863, for twenty-two guineas. The prices of the other females of the herd ranged from twenty to thirty guineas. Of the bulls, Mr. Meaking bought Duke of Cumberland, calved June 1850, for forty guineas; the Earl of Aylesford paid sixty guineas for Second Duke of Cumberland, calved October 1865; Mr. Wilson, of Abbey, paid thirty-six guineas for Wild Eyes, calved April 1864.

SALE OF LORD RADNOR'S SHORTHORNS AT COLESHILL.—Mr. Strafford, of Euston Square, London, offered for sale by auction, at Coleshill, the seat of Earl Radnor, a draft from the herd of 47 Shorthorn cows and heifers, and 9 bulls. The cows and heifers averaged £21 10s. 9d., and the bulls averaged £23 5s. 11d. The prices generally were not so high as might have been expected, being influenced, no doubt, by the existence of the cattle plague and the restrictions connected therewith.

SALE OF THE LUDDINGTON HEREFORDS.—The sale of a large draft of the Luddington herd of Herefords, the property of Mr. John Baldwin, was conducted by Russell and Son. The company was very numerous. The catalogue extended to forty-nine head; but the prices realized yielded a very moderate average, without any high figures, though several of the older animals were prize-takers. The following are amongst the best prices for cows: Dora (calved 1859) 29 guineas, Countess of Shrewsbury the Third (1856) 30 guineas, Salopia (1863) 33 guineas, Fairy the Second (1862) 28 guineas, Dora the Second (1862) 28 guineas, Venus the Sixth (1860) 51 guineas, Polly (1850, the winner of several prizes) 31 guineas, Cremorne (1864) 28 guineas. Some of the bulls were passed over without any biddings whatever; but Battersea was repurchased by his breeder, Mr. Vevers, for only 55 guineas. Royal Oak, calved in May, 1864, by Battersea, from Selina, the winner of the first prize in her class at the Battersea Meeting of the R.A.S.E., was purchased for the Duke of Bedford at 60 guineas. A lot of two-year-old bullocks averaged £23 each, and the yearlings about £9 a head. Mr. Vevers, in repurchasing his Battersea, was rewarded with "three times three" cheers! but surely there could not be much cause for making any particular demonstration over such a price for such an animal. The young stock from this herd, as we stated in our report of the Stratford show last year, appeared to be of but very moderate promise, and hence possibly the prices realised.

SALE OF MR. GEORGE GRAHAM'S SHORTHORNS.

AT YARDLEY, BIRMINGHAM.

On Wednesday, Sept. 19, the entire herd of Shorthorn cattle elonging to Mr. George Graham, of Yardley, who is leaving his esidence, was brought to the hammer by Mr. Strafford. This erd, almost unique in itself, was formed only a few years ago y its owner, taking for its basis the renowned strain of Faws-y, and engrafting on it, with great judgment, the best of the ates type. All the animals were excellent, some superior to ny thing we have seen for years, with firm yet elastic flesh, lenty of hair, great symmetry, apparently good milking ualities, and for colour, either rich roans or good reds, ith one or two white, probably following the distin-uished lineage of 7th Duke of York, who is a grand white ull. There was a large company, nearly all the chief dmirers of the Bates and Fawsley blood being present. ome of the animals had a cross of Booth; and although the ull was of the best possible character—Sir James (16980) by ir Samuel (15802)—yet unmistakably the cross was prejudicial them, in a pecuniary point of view; although, we must ad-it, their personal qualities were admirable. The bull Touchtone (20986), a pure Fawsley, had done great service in the erd, evidently imparting fine flesh and a profusion of rich hair; and the grand style of the Bates blood in 7th Duke of York, 2nd Duke of Bolton, and Grand Duke (10284), was the admiration of every one. The prices realized were far in excess of what was expected, as will be seen in detail.

COWS AND HEIFERS.

Countess, 80 gs.—Mr. F. Leney (Kent).
Lady of the Lake, 81 gs.—Mr. Beaufort (Beds.).
Columbine, 51 gs.—Mr. Marsh.
Cornelian, 70 gs.—Mr. Lyon (Burton).
Christine, 41 gs.—Mr. Walker.
Grafin Foggathorpe, 64 gs.—Mr. Lyon.
Bracelet 2nd, 82 gs.—Mr. Beaufort.
Fantail, 52 gs.—Mr. Foster.
Camilla, 40 gs.—Mr. Kirtling.
British Belle, 70 gs.—Mr. J. Clayden (Essex).
Grafin Foggathorpe 2nd, 70 gs.—Mr. Eaton.
Bracelet 3rd, 80 gs.—Mr. Beaufort.
Cosette, 18 months old, 100 gs.—Mr. J. Clayden.
Grafin Foggathorpe 3rd, 16 months, 42 gs.—Mr. Kirtling.
Catalani, 18 months, 100 gs.—Mr. Adcock (Fandish).
Lady Wild Eyes 2nd, 18 months, 115 gs.—Mr. Beaufort.
Florence, 18 months, 43 gs.—Captain Oliver.
Fantail 2nd, 18 months, 50 gs.—Mr. J. K. Fowler (Aylesbury).
Countess 4th, 12 months, 120 gs.—Mr. Lyon.
Lorelei, 6 months, 51 gs.—Mr. Lyon.
Grafin Foggathorpe 4th, 6 months, 32 gs.—Mr. Fletcher.
Clotilde, 4 months, 70 gs.—Mr. Finlay Dunn.
Fantail 3rd, 6 months, 35 gs.—Mr. Foster.
Beauty, 5 months, 40 gs.—Mr. Foster.

Total of cows and heifers £1,630 12s., or nearly £68 each.

BULLS AND BULL-CALVES.

Touchstone, 5 years old, 36 gs.—Mr. Wymall (Hereford).
Knightley, 2½ years, 100 gs.—Mr. Leney.
Cæsar, 6 months, 60 gs.—Mr. Sheldon.
Blair Athol, 18 months, 47 gs.—Mr. Burdett.
Bodenbach, 6 months, 50 gs.—Mr. Barnes (Herts).
The Baronet, one month, 35 gs.—Mr. Marshall (Surrey).

Total of bulls £344 8s., or nearly £58 each; the grand total being £1,975 for the 30 animals.

The relative value of the several strains may be thus distinguished:—Mr. Adkins' Charmers, of which there were seven members, averaged £82 13s., three of them making each 100 gs. The five Fillets, from Sir C. Knightley's made £66 7s. 2d. each; Countess, ten years old, of this family, fetched 80 gs., and her daughter Countess 4th realized 120 gs., the highest price of the day. Seven Foggathorpes averaged £61 10s.; five Bracelets, £62 15s. 9d.; and four Fantails, £46 19s. 9d.; while Lady Wild Eyes 2nd, an odd heifer of the Kirklevington strain, sold for 115 gs. This must cheer the hearts of all Shorthorn breeders, as it shows a revival of old prices, and what can be achieved by patience and perseverance, with judgment, as evinced by Mr. George Graham, of Yardley.

SALE OF SHORT-HORNS.

On Thursday, Sept. 20, Messrs. Wetherell sold by Auction, at Kirkbank, near Richmond, Yorkshire, the entire herd of Shorthorns, the property of Mr. Alfred Stables. The following are the prices obtained:

COWS AND HEIFERS.

Red Rose, calved 1853—Mr. Linton, 17 gs.
Susan, roan, calved May 31, 1857—D. Neasham, 18 gs.
Clara, red and white, calved July 20, 1857—Mr. Hawking, 20 gs.
Lady, roan, calved Dec. 1, 1858—C. Cradock, 26½ gs.
Sultana, roan, calved in 1858—Earl of Zetland, 29 gs.
Red Rose 2nd, red, calved March 4, 1859—C. Cradock, 26 gs.
Gratitude, roan, calved Feb. 20, 1859—Mr. Roecliffe 26½ gs.
Lady Annette, red and white, calved June 11, 1861—S. Johnson, 40 gs.
Buttercup, roan, calved April 20, 1861—Major Cochrane, 27½ gs.

Lily, white, calved March 30, 1862—Mr. Burnley, 26½ gs.

Amy, white, calved April 6, 1862—Lady Pigot, 30½ gs.

Claret, roan, calved April 17, 1862—Mr. Pickersgill, 30 gs.

Susannah, white, calved May 24, 1862—Mr. Cochrane, 27 gs.

Alexandra, roan, calved Feb. 23, 1863—Mr. Thornton, 21½ gs.

Lady Alice, roan, calved Sept. 29, 1863—Mr. Walker, 35 gs.

Polly 2nd, red and white, calved Oct. 19, 1863—Mr. Brown, 12½ gs.

Gratitude 2nd, red, calved Sept. 10, 1863—Mr. Neasham, 15 gs.

Red Roan 2nd, calved April 7, 1864—Mr. Hutchinson, 25½ gs.

Red Violet, calved March 8, 1864—Mr. Cradock, 20 gs.

White Violet, calved March 8, 1864—Mr. Neasham, 17 gs.

Claret 2nd, red, calved April 18, 1864—Mr. Pickersgill, 20½ gs.

Amy 2nd, white, calved May 10, 1864—Mr. Ellershaw, 18 gs.

Lady 2nd, red and white, calved March 17, 1864—Mr. Cochrane, 17 gs.

Lily Grey, roan, calved June 12, 1864—Mr. Cradock, 31 gs.

Susannah 2nd, roan, calved Oct. 5, 1864—Mr. Pierse, 15½ gs.

Buttercup 2nd, roan, calved Dec. 26, 1864—Mr. Pierse, 13½ gs.

Gratitude 3rd, roan, calved Feb. 12, 1865—Mr. Cradock, 12 gs.

Mistake, roan, calved July 12, 1865—Mr. Russell, 15 gs.

Red Roan 3rd, calved Feb. 10, 1866—Mr. Thornton, 11½ gs.

Young Alexander, red and white, calved March 28, 1866—Mr. Brown, 9½ gs.

Gratitude 4th, white, calved April 30, 1866—Mr. Ellershaw, 7½ gs.

White Silk, white, calved May 24, 1866—D. Neasham, 8½ gs.

Roan Lily, roan, calved June 24, 1866—Mr. Johnson, 20½ gs.

Lady Arnet, roan, calved Aug. 12, 1866—Mr. Johnson, 10½ gs.

BULLS.

Towneley Warlaby, roan, calved March 21, 1865—Jas. Cooke, 21 gs.

Double Magnus, roan, calved May 5, 1865—Major Cochrane, 23 gs.

Red Windsor, red, calved Feb. 7, 1866—Mr. Johnson, 15 gs.

Royal Windsor, roan, calved March 3, 1866—Mr. Horn, 9 gs.

Clown of Windsor, roan, calved March 13, 1866—Capt. Bradley, 8½ gs.

Towneley Windsor, red and white, calved April 26, 1866—Mr. Roecliffe, 25½ gs.

Scottish Windsor, roan, calved April 26, 1866—Mr. Hawking, 6 gs.

Raines Windsor, roan, calved April 26, 1866—Mr. Walker, 11 gs.

Bull Calf from Amy, 9 gs.

SOUTHDOWN SHEEP: MR. RIGDEN'S SALE.—The very high position held by Mr. Rigden, of Hove, as a breeder of Southdown sheep, gives to his annual sale a degree of interest extending far beyond the limits of Sussex. The pens of ewes sold Tuesday, Aug. 27, from the prices they fetched, show how much value is attached to the Webb blood. The rams, too, many of which were by the late Mr. Webb's finest prize sheep, fully shared in the admiration generally expressed by the large company present. The ewes realized £350, or an average of nearly £18 10s. per pen of five. The rams for letting ran as high as forty guineas, and altogether the sale must have been most satisfactory, both to Mr. Rigden and to Mr. Bushby, of Rustington, by whom it was conducted. Mr. E. Stenning, of Godstone, bought the first lot of sheep at three and a-half guineas. The second, third, and fourth, after a good deal of competition, particularly for the second, fell to Capt. Thurlow (Baynards), at five guineas, three and a-half guineas, and five guineas. No. 5 was bought by Mr. Hallett, Manor Farm, at £3 17s. 6d. Lots 6 and 7 fell to Capt. Thurlow, at £3 12 6d. and £3 2s. 6d. Mr. E. Stenning bought lots 8 and 9, a £4 2s. 6d. and £3 7s. 6d. Lot 10 fell to Mr. Cooke for £ and lot 11 to Capt. Thurlow, at £3 2s. 6d., and lots 12, 13 a 14 to Mr. Hallett, for £3 each. Lot 15 was carried off by M Stafford O'Brien for £2 17s. 6d. This closed the sale full-mouthed ewes. The rams for letting went as follows:

		G
Two years old, by the gold medal Battersea sheep......	Earl of Radnor...........	30
Two ditto, by Webb's No. 21, a pure-bred Webb sheep ...	Duke of Richmond	40
Two ditto, by Webb's 39, ditto	Mr. Hallett	21
Two ditto, by ditto	Capt. Apthorpe............	18
One year old, by second prize ram at Battersea	Mr. Smith...................	23
One ditto, by ditto	Rev — Parkes............	12
One ditto, by Webb's 39	Mr. Gorringe	26
One ditto, by ditto	Mr. Woodhouse	14
One ditto, by ditto	Mr. Majoribanks	20
One ditto, by ditto	Rev. J. Goring............	15
One ditto, by ditto	Mr. Selby	11
One ditto, by ditto	Mr. S. A. Leigh	16
One ditto, by ditto, pure-bred Webb..............................	Mr. Hallett	10
One ditto, by ditto	Rev. J. Goring	11

RAMS FOR SALE.

		G
Three years old, by a son of Windsor Castle...............	Mr. Heasman	10
One year old, by Webb's 39...	Mr. O'Brien	16
Ditto, by ditto	Mr. Lawrence	11
Ditto, by ditto	Mr. Smith..................	14
Ditto, by ditto	Mr. Newland	10
Ditto, by 2nd prize Battersea.	Mr. S. A Leigh	10
Ditto, by Webb's 39............	Mr. Agate..................	13
Ditto, by 2nd prize Battersea.	Mr. Lawrence	10
Ditto, by ditto	Mr. Selby	10

HOW TO GET RID OF THISTLES.—Mr. Prest Burythorpe House, writing to the *Leeds Mercury*, offers th following suggestions:—“As I observe an unusually larg number of thistles this year, I would wish to give a hint to m brother-agriculturists how to get rid of them. My farm, a fe years ago, was dreadfully infested with them. I effected thei destruction by the following plan:—I had them mown at th season of the year, *i.e.*, just preceding the development of th flower; this prevents the seed coming to maturity, and it i quite as essential to have them cut again in the autumn, as th stem is then hollow, and by cutting off the top the rain-wate passes down the tube and rots the root, thus both the seed an root are destroyed. I am convinced if farmers would onl adopt this plan the entire extirpation of this unsightly, injuri ous, and obnoxious plant might be easily and readily effected I would recommend stubbing up the large thistles, which a perhaps better known in agricultural phraseology as ‘burs’ in neglect of carrying out this operation, that portion of th stem contiguous with the earth would retain its vitality, an throw out a goodly number of young branches. The knobs o buds should not be in a too far advanced state before the pr cess of cutting is proceeded with, as the feeding properties i the stem continue to succour and support the flower for a con siderable time after being detached from the root. Let m also strongly advise the surveyors of highways to act up their authorized powers, and carefully remove all thistl growing within the limits of their jurisdiction. This wise a proper attention to their official duties would aid materially ridding the country of one of the most hostile and destruct enemies the farmer has to contend with. It would be we landlords would offer annually, as a prize, a silver goblet (£5 value) to the tenant whose farm had growing on it fewest number of thistles. This would stir up a spirit of le timate and good-natured emulation, and would, I am s have its attendant beneficial and happy results. It is in tr a hard case for anyone who is orderly and attentive, and un ously endeavours to rid his farm from thistles, to witness downy seed taking easy transit during a slight breeze over t hedge of his heedless and slovenly neighbour.”

CALENDAR OF AGRICULTURE.

Sow wheat on clay fallows, with one ploughing broadcast by hand, or by drill machine. Steep e seed in stale urine, or in some corrosive liquid; y with hot lime, and cover by harrowing.

Dig the potato crop with fork or plough, and re the tubers in round clumps or long ridges, h a covering of straw or turf. Secure beet, nips, and carrots in a similar way. Remove dish turnips from all lands to be sown with at on one furrow of ploughing.

t rams to ewes, 1 to 50, assorted by their ective qualities. Mark the rams and ewes which used together, that the progeny may be distinhed, and best done in every fortnight. Keep wes on good pasture, and assist with turnip for six weeks of the intercourse.

ce the cattle in the yards for winter—fattening in two and three together, and store animals and eight. Give fresh food daily, and litter . The calves of the year require a very l attention, in the accommodation and treat. Feed milch cows with cabbage and beet alternately with chaffs of hay and straw.

the lambs of the year to consume turnips on dry lands, confined by nets and hurdles, on fresh ground every two or three days. On damp soils the turnip may be carted to a lay or stubble field, and spread evenly on the surface for consumption. Give the lambs and the fattening flocks full and ample keep—the ewes and store flocks one-half less, to keep them in a fresh condition.

Put swine to fatten, two in a sty together, and use steamed food in pototoes and meal. Give the store pigs raw potatoes and light grains, with steamed food occasionally. Have the steaming apparatus in full going-order. Use steamed food for all animals—horses, cows, pigs, and poultry.

Anoint sheep during this month, to kill lice and vermin. Tobacco liquor with spirits of tar for mountain sheep, one bottle to each animal, with a wine glassfull of the extract of tar. Heavy sheep are dipped in "Bigg's Composition," a chemical preparation, of which the vendor furnishes the materials and the necessary directions for use.

Sow winter vetches for spring use on the ground, and a late cutting for soiling, and to meet the earliest spring-sown crop, as no farmer can have too many acres of such a valuable succulent plant,

CALENDAR OF GARDENING.

KITCHEN GARDEN.

pe broccoli requires early care, and as each is cut, the stump and leaves ought to be red, and when dry should be burned for the of the ashes. Spring broccoli-plants should be sloped down, the heads to the north, and rth brought up nearly to the leaves; or if in hes, the stems ought to be landed up.

t root and carrot are partially digged up, and d in sand for early use.

liflowers in frames, or under glasses, must abundance of air.

bbages: Finish the planting as soon as ble.

dive: Tie up some good plants for blanching, draw fine earth about the stem. Keep the spinach clear from weeds. Sow small salads more, also a few Mazagan beans.

aragus beds should be brought into winter not waiting for the ripening of the seeds. d method is to cut all the haulm to within or three inches, remove every week, then enches on each side, a foot deep, and spread rth over the beds or rows. Place the haulm se trenches evenly, at the bottom in 20 or 25 ng, with ½ lb. of salt sprinkled over it; fill the hes level with half-rotted stable dung or leaves. kale may be treated in the same way, the s of every vegetable being always returned to oil, but deeply buried. Rhubarb and artichokes are thus much assisted without the salt, the dung in the trenches becoming an admirable earth.

Potatoes: Raise and store dry the second early; and, indeed, all kinds of which the haulm is yellow. Dress and clean all the quarters in composite manure, and ridge and dig beds of heavy soil.

FRUIT DEPARTMENT.

Trees and shrubs, deciduous and evergreen, are safely planted after the middle of the month, on grounds well drained and trenched 15 inches deep, Lay muck or dung over the soil, as top-dressings are found the best of all manurings.

Gather and store apples and keeping-pears, which require a warmer room than apples.

FLOWER GARDEN.

Place auriculas in airy frames; camellias and heath in a cool, dry, and well-ventilated pit or green room, and all succulent plants in a home with a full south aspect. Shrubberies to be neatly kept.

SOAP SUDS FOR ROSE BUSHES.—Seeing an inquiry in the *Rural* as to whether soap-suds are detrimental to rose bushes, I thought I would give you a little of my experience. I have about twenty varieties of roses, climbing and others, and have always practised watering them with suds from the wash, and have often heard the remark, "Why, how thriving your roses look; mine are all eaten up by the worms and bugs." I do not know to what else to attribute it except the soap-suds. —S. A. WHITTLESEY, *in Rural New Yorker*.

FOREIGN AGRICULTURAL GOSSIP.

The domestic animals shown at the International Agricultural Exhibition at Vienna were of much excellence, indicating that the Austrian proprietors know how to preach by example. The horse production of Austria not only responds to the requirements of the cultivator, but is also a matter of fashion and luxury, which governments seek to foster in the interests of the military service. In Austria this latter pre-occupation has made the State a breeder, and the products of its haras enjoyed the honours of the show. The cattle of indigenous breeds were in a minority, although there was no reason why this should have been the case, as was abundantly evident from the fine lots of the breed of Corinthia, Styria, the Tyrol, and Salzburg, and the Hungarian specimens from the herd of Herr Richter, of Konigsaal. A solitary Durham bull exhibited by the Archduke Albert represented what may be called improved breeds. The milking races belonged for the most part to the Dutch breeds, and to their derivatives of Oldenburg, Eiesonne, &c., introduced long since, and the products of which competed advantageously with imported animals. The Swiss breed and its crossings were classed—although it is difficult to say why—as a special butcher's race. It was well represented, as were the breeds of Allgau and Montafun, which competed together. Upon the whole, the cattle classes were remarkable from every point of view, since the animals composing them had been selected from the most renowned herds; it was a general impression, however, that purity of breeding was not always the great pre-occupation of breeders. Sheep were considered to form the richest part of the exhibition, and comprised a great variety of those types which progressive agriculture improves little by little. This was to be expected in a country in which progress in zootechny commenced with sheep, which form the principal wealth of the great estates of Bohemia and Hungary. At the last Universal Exhibition at Paris there were specimens from the sheep-folds of these districts, in which the production of fine wool has been brought to the greatest perfection. Since then a less exclusive tendency has appeared, and a return has been made to the simultaneous production of meat and wool. The French merinoes, of the Rambouillet stock, are excellent specimens of an improved breed from this double point of view. The exigencies of commerce and the competition of Australia are forcing breeders to produce now flocks the wool of which is adapted both for carding and combing purposes. Breeders are beginning to yield to these exigencies, but very often with hesitation and regret, because it is only against the grain that an abandonment takes place of results obtained during a long series of generations. Further, in many districts the policy in question is virtually a recommencement of education, as in the last thirty years the breeding of fine-woolled races has become exclusive, and the present tendency may be considered as a step backward. Breeders of pigs in Austria, like breeders of sheep, recognise the superiority of the English type; but they use it as little as possible, as was shown by the far-from-numerous exhibition of pigs at Vienna. What deserves more especially to be noted is that Austria produces pigs in very great numbers, not only for export, but also for interior consumption, pork forming the basis of the food of the people. The progress realized in the improvement of breeds of domestic animals implies, besides, a careful selection of reproducers, increased care and attention, and more copious and richer feeding. The transition is, therefore, easy from animals to agricultural products. This division of the show was very rich in collective exhibitions brought together by agricultural societies and schools, great proprietors, &c. As all the specimens exhibited were excellent, we might almost publish a catalogue of them. We can only find space, however, to notice in the collection of the Prince of Lichtenstein the wheat of Major Quentin, and the barley of Annat in that of the Prince Schwartzenburg, the rye of Kruman, and the wheat of Libiegitz; and in that of the Agricultural School of Grossau, the oats of Edeleny, the yellow maize of Hungary, rice-wheat, &c. Amongst the products of milling industry we might class in the first rank the flour of the mills of Fetschen and Tancovacz. Finally, as perfect in all the collections where
were met with, we may mention the hops of Zittolicher,
oats of Bewick, the wheat of Weltras, the lentils of Zzć
hel, the flax of Styria, the wines of Hungary and of the
tary confines, particularly of Weisskirchen. These last m
said to have been extra exhibitors; but they rendered a val
co-operation in all departments of the programme—in fact,
showed the utility of the sacrifices made by the state for
districts, which are administered by soldiers trained
special school. Since 1856 the government has distril
to its military colonists improved implements to the va
£2,000, besides other encouragements awarded in the in
of agricultural progress. Austria comprising 36,00
acres of forests, and 46,000,000 acres of arable land, th
portance of the exhibition of forest products, organiz
Vienna, will be readily understood. It should be obse
however, that the immense forest domains of Austria ar
spread regularly over the whole surface of the empire; a
the high mountains are still generally crowned with
forests, many of the plains are completely destitute of tim
Upon this head, an inquiry made in Hungary to ascertain
causes of the dearth of 1864 was very instructive, and p
that the absence of forests was the cause of the bad
obtained in the now wooded districts. This unequal di
bution of timber in Austria is the reason why in other p
of the monarchy virgin forests are still met with. The
sence of outlets and the want of communications ofte
wood to have no other value than that which is given to i
converting it either into potash, or turpentine, or char
The exhibition of forest products naturally reflects th
influences, but it was still a very fine one. The collectio
seeds and plants which were exhibited were also very c
plete, especially in the collective exhibitions of the State,
Archduke Albert, the Princes of Schwartzenberg, the Prin
Lichtenstein, Count de Schonbron, the Baron de Sind,
There was also a very complete collection of tools and ute
and the Emperor Francis Joseph himself stopped some ins
in this section before a very imposing sausage-making a
ratus. The sausage meat entered in enormous masses
rotary cutters, and fell in a prepared state into boilers,
which the sausages emerged cooked at the end of
minutes. Those who are familiar with German manners—
is, those who are familiar with the German penchant
sausages—will readily appreciate the importance attache
this feature of the exhibition. Labour is scarce in the
agricultural centres of Austria, and the peasant appr
consider work for others as degrading. Even whe
has more wholesome notions of political and social ec
he is usually an indolent worker, requiring ve
wages. These circumstances induced the great
proprietors to have recourse to machinery w
it is practicable to employ it, and there are few coun
which agricultural machinery is so well utilized as Aust
few countries in which manufacturers of ploughing ag
attain more brilliant results. These circumstances ha
tified the establishment of the depôts organized by the
pal English firms engaged in the production of agri
implements. The exhibition was especially rich in th
machines and miscellaneous motors; but although all
systems were represented, no novelty was indicated e
regards invention or improvement. The indigenous
tion of implements in Austria sustains a serious com
with foreign fabrications, as was shown, for instance,
machines exhibited by Borrosch and Eichmann, of
What we have just said with respect to the thrash
chinery exhibited applies also to other machinery and
ments. In the present state of the agricultural im
manufacture, whoever has seen one exhibition can re
exact account of all others, which would seem to pro
agricultural machinery has attained a degree of perfe
which every novelty becomes an event. The exhibi
implements at Vienna accordingly comprised only wh
viously existed. There were no steam ploughs on show—

sult attributed to the little favour with which these ploughs have met on the great plains of Hungary, where attempts have been made to introduce them.—A project is under consideration for the development of a system of irrigations in a district of France which has been aptly termed "the granary of Paris," viz., the Beauce. Thus the prefect of the Loire-et-Cher, in a decree dated Aug. 8, 1866, authorizes certain engineers to prepare plans, &c., in connexion with the irrigation of the Beauce plains.—The sales of reproducing animals made at the Grand Jouan School of Agriculture have gradually become highly successful. This year former success has been maintained, Narbal, a Durham bull, three years and three months old, having realized £26 17s. 6d; Roban, an Ayrshire bull, ight months old, £8 8s.; and Nadir, an Ayrshire-Durham-Breton, two years and one month old, £16 8s. Nine cows and heifers have also been sold as follows: Valery, Durham, 30 months, £26 0s. 8d.; Valida, Durham, 16 months, £17; Valentia, Durham, six months, £6 10s.; Bethisy, Durham-Breton, 4½ years, £10 10s.; Dandy, Ayrshire, 13 years, £12 s. 9d.; Gratiana, Ayrshire, 4 years 3 months, £16; Lina, yrshire, three months, £16 3s. 6d.; Lobélier, Ayrshire, 15 months, £8 8s.; and Luciole, Ayrshire, 12 months, £8 12s. Three oxen were sold as annexed: Pierrot, Parthenais, 5 years, 6 3s. 6d.; Paltoquet, Parthenais, 5 years, £16 3s. 6d.; and hael, Ayrshire, 4 years 7 months, £13. A few sheep e offered, and eight Southdown rams of various ages made 3 7s., while 12 Southdown ewes of various ages brought 4 9s. 6d. The entire proceeds of the sale were £307 5s.

Count Odart, the father of French viticulturists, has just d at Tours, at an advanced age. Born May 1st, 1778, at geau, in the commune of Parçay-sur-Vienne, he pursued education painfully and with difficulty during the revolunary era. He passed six years in the college of Pontlevoy, t first by Benedictines, and then by other masters, who ebrated the death of Louis XVI. by making their pupils ce the *Carmagnole*. He quitted this college in order to be companion to his father, who was imprisoned at Blois. The ter having recovered his liberty, returned to the country th his son, for whom he purchased the mathematical works Bezout. The assiduous study of this author, and some lesns taken at Tours, enabled the young man to be received to the Polytechnic School, then newly-founded. The campgn of Italy in 1798 having inspired the Directory with ely fears, the pupils of the Polytechnic were sent as conripts into various regiments, it being understood that there s more need of soldiers than of officers. Count Odart was ced in a regiment of artillery, where the feebleness of his ht contrasted singularly with the exigencies of his profesn. He was re-established after the 18th Brumaire at the lytechnic, but the death of his father having recalled him to domestic hearth, he abandoned his military career in order devote himself to the cultivation of the estate which delved upon him. He essayed agriculture at a period when it d few guides or precepts, and he introduced into Touraine e cultivation of the hemp of Piedmont. He also introduced e Dutch poplar, which had proved very successful on the ores of the Essonne, through the efforts of M. Duhamel du nceaux. By a happy inspiration, however, his efforts were imately concentrated upon viticulture; and his ingenious d persevering observations in connection with the cultivan of the vine and the production of wine, and the carefully tained studies by which he controlled his observations and ended their circle, revealed a great number of new facts.—e agricultural society of the province of Luxembourg will d an international show on October 11th, 12th, and 13th, Arlon. The exhibition will comprise the following divins:—First, reproducing animals; secondly, agricultural l horticultural products; thirdly, forest products; fourthly, icultural implements and machinery; and fifthly—hough the programme seems to have a blunt knack of ting matters—rural servants. The exhibition will especially interesting to all who wish to study the old dennes breeds. The agricultural and horticultural circle of Grand Duchy of Luxembourg, of which Prince Henry of Low Countries is the honorary president and patron, will d its annual show, Oct. 1, 1866, at Luxembourg. Besides zes allowed for domestic animals, machinery, and drainage, re is an agricultural sanitary exhibition, in which a prize is posed to be given to the small cultivator whose abode des to be cited as an example in respect to order and neatness. Another novelty is an exhibition of fat stock fit for the butcher.—The recent war has placed Italian agriculture in an exceptional position, which has considerably increased the difficulties and charges of rural property. But although slow, agricultural progress is not the less real in Italy; and the Italian press, notwithstanding the crisis which it has traversed, displays redoubled zeal in encouraging agriculturists and proposing useful inventions. Italian agriculture certainly stands in need of encouragement, for it has had troubles enough this year. Long before the period of the harvest, the Italian youth had deserted the country districts in order to join their regular and volunteer corps; and taxes and burdens of every kind have weighed heavily on landed proprietors and farmers—in fact it may be said that both labour and money have made default. The forced circulation of paper-money has caused a great perturbation in daily transactions, and the agio which is the consequence of it has suspended all the exchanges on the markets. The prices of food-products have been greatly reduced, to the detriment of producers, and the free importation of foreign products is considered to have increased the depression occasioned by the absence of credit and the dearth of money. Finally, the atmospheric conditions which have obtained have added to the general distress. The crops, which promised well at the commencement of the year, suffered from rain and cold in May, and wheat has been far from abundant. The silk crop has succeeded moderately well. The vines have been attacked in many localities by oidium, and insects have committed on other cultures their habitual ravages. The forage and hay crops have alone responded both in respect of quality and quantity to the general expectation. The effect of this combination of circumstances is all the more trying, since it refers to a country which out of 22,000,000 inhabitants comprises 16,000,000 agriculturists upon whom the burdens of the state more particularly devolve. Since 1859, the sacrifices demanded of Italy have exhausted all its resources, and it has not been possible to constitute public services and develope public works in so short a space of time without compromising the future of the country. The Ministry of Agriculture, Commerce, and Industry—the suppression of which has been several times suggested in the Italian Parliament—has happily survived; the section of commerce has alone been detached from it, in order to be united to the Ministry of Finance, and under the influence of so eminent a man as Signor Cordova the Ministry of Agriculture can scarcely fail to render services to Italy by removing the administrative obstacles due to the old legislation of the various Italian states.—A law with reference to the establishment by communal councils of fairs and markets has just been promulgated; and that the Parliament may occupy itself with a general law on forests, the ministry has prepared a scheme of forest management applicable to all the wooded districts of the kingdom. The depôts of stallions, which depended on the Ministry of War, have been placed under the direction of the Ministry of Agriculture, which will reduce the number of the stallions below 600.—In its sitting of June 11, the Chamber approved without discussion a scheme for a *Crédit Foncier*, which has been a long time under consideration. The object of this institution, which will be represented in the principal towns of Italy, differs from that of the *Crédit Foncier* of France, insomuch that it will reduce the rate of interest on money lent to agriculture, and so alleviate the position of landed property. Already the savings banks of Milan, the *Monte Paschi* of Sienna, and the Bank of Naples have undertaken without subscriptions operations of the greatest utility. —With reference to improvements attributable to private enterprise, we must note works executed on the littoral of Brindisi (in the province of Otranto) by Prince Dentrice di Frasso for the drainage of the marshes enclosed in his properties. A canal now diverts into the sea the principal part of the stagnant waters, and the climatic conditions have been so much improved that the population is already occupying hitherto neglected localities. There are so many lands still to improve and render habitable, so many heaths to break up, so many roads or canals to open up, that the example of Prince Dentrice, as well as that of the Aventi Society, in the amelioration of the swamps of the Ferrarais district, must be regarded as of great importance. The agricultural committee of Voghera, presided over by Signor Valli, does not slacken its efforts in connection with the establishment of agricultural libraries; more than 10,000 volumes, numerous lithographs, and other necessary plant have been collected and placed at the disposal of communes. According to a recent report of the general direction of the customs, the movement of wines in Italy, during the last few years, has been as follows :—

Year.		Imports. Litres.		Exports. Litres.
1861	...	30,223,000	...	21,735,000
1862	...	16,312,000	...	25,867,000
1863	...	18,570,000	...	24,894,000
1864	...	28,159,000	...	30,104,000

In the first nine months of 1865, the total imports were 16,981,000 litres, and the total exports 17,260,000 litres. Thus, the imports of wine into Italy nearly equal the exports of wine from it, and the wine-producing industry of Italy does not appear likely to sustain a competition with the corresponding industry of France or Spain. Italy possesses at the same time the elements of great viticultural prosperity; what is wanted is a popularisation of good methods of cultivation and fabrication, and a classification of the products of the vineyards of the country, besides an association of viticulturists in a common interest.—Silks, which is one of the lucrative branches of the national industry of Italy, has been affected in its production during the last 12 years by disease in the silkworms in mulberry trees. The crop of silk has diminished to 2, tons annually. Attempts have been made in Italy, as in Fra to remedy the evil by considerable purchases of foreign se but of late years the results have been generally unfavoura In 1866, worms of Japan, crossed with those of Italy, h furnished some good cocoons ; the indigenous worms have succeeded passably, notwithstanding the adverse influence wet and cold May. "What a curious affair," some Eng readers may be tempted to exclaim, "is Italian agricultu The Italian farmers appear to be quite as much dependent the prosperity of their vineyards and the health of their worms, as upon the tillage of their meadows and the symm of their oxen. Well, but what, after all, is agriculture the development and utilization of the resources of the And the more comprehensive agriculture is, the more and assured must be the position of agriculturists, since if branch of their industry fails, all branches are not lik prove equally disappointing. Anyhow, in some matters, It agriculture appears to be in advance of the agriculture of lands. Thus it seems that *brome de Schrader*, which has regarded elsewhere as a novelty during the last two or years, has been cultivated in Lombardy ever since 1855.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

Notwithstanding that the weather has been very changeable, and that large quantities of rain have fallen in most parts of England, some progress has been made in harvest-work. In the districts south of the Humber, nearly or quite the whole of the wheats have been secured ; but there still remains large quantities of barley, oats, and beans exposed in the fields. In the northern counties produce has reached the stackyards slowly, and in very middling condition. The wheat trade has therefore ruled firm, and the quotations have advanced 4s. to to fully 6s. per qr. The rains have produced a full average quantity of grass in the pastures, and live-stock has fared remarkably well, although the land in some counties has suffered from heavy floods. As regards the new crop of wheat, we may observe that it is certainly quite equal to last year in quantity, but deficient in quality. The best samples are, therefore, likely to command extreme rates for several months, even though the imports from abroad may be on the increase. Clearly, much of the new wheat in stack cannot be used for some time, without a large admixture of dry foreign. The crop of barley is a very large one, but at least two-thirds of it have suffered damage from excessive moisture. Evidently malting parcels will be high in price during the season: already they are worth 48s. per qr. Oats have turned out well, but poor in quality. The oat trade has, therefore, been firm at 1s. to 1s. 6d. per qr. more money. Although the growth of beans and peas is unusually large, those articles have commanded rather more attention, and the quotations have tended upwards. The progress of hop-picking has been slow, yet rather large quantities of new hops have been disposed of at from 120s. to 230s. per cwt. The growth of hops, as a whole, is nearly an average. A few parcels of new hops have arrived from Germany. The crop in the United States is fairly represented. The public sales of colonial wool, at which about 140,000 bales have been disposed of, have gone off steadily at an advance in the quotations, compared with the previous auctions, of 0½d. to 1d. per lb. The bulk of the above quantity has been taken by home-manufacturers. The sale for English wool, owing to the reduction in the Bank rate for money to 5 per cent., has rather improved, and prices have slightly advanced. The firm state of the cotton trade and the steady demand for woollen fabrics in the United States are calculated to give some firmness to the value of wool for several months. About 50,000 bales will be brought forward at the next public sales. Some of our advices state that the potato-disease has increased considerably. Our impression is that losses will be sustained in some quarters, arising from excessive moisture, but as yet there are no indications of extensiv ease. The potato trade in London has been far from at from 40s. to 120s. per ton. The imports of potatoe the continent have been trifling. The demand for and straw has fallen off considerably, and the quotati declined to some extent. Meadow-hay has realized £5 8s., clover £5 to £6 10s., and straw £1 16s. to £2 load. The crop of hay, taken as a whole, has exceed year considerably. The Scotch harvest has progressed We have, as yet, no reliable accounts at hand respecti yield of cereals in Scotland, but we are of opinion that turn out poor in quality. The corn trade has shown activity, and prices generally have advanced. In rather large quantities of wheat, barley, and oats have secured. The corn trade has been tolerably active hanced quotations. The shipments of produce to have been on a very moderate scale.

REVIEW OF THE CATTLE TRADE DURING PAST MONTH.

The supplies of home-fed beasts on sale in the Great politan Market during the month have been very moder but from abroad the imports have been extensive. With exception of the primest stock having been in fair reque ahout stationary prices, the demand has ruled heavy, at cline in the quotations of from 2d. to 4d. per 8lbs. The breeds have changed hands at from 5s. 4d. to 5s. 6d. per The general quality of the stock has been only middling.

Sheep have come to hand in fair average numbers, and have noticed some improvement in their condition. Ne all breeds have moved off slowly, and the currencies have way 2d. to 4d. per 8lbs The best Downs and half-breds realized 5s. 10d. to 6s. 4d. per 8lbs.

There has been very little change in the value of English or foreign calves, the supplies of which have been no means extensive. The top figure has been 5s. 6d. per The foreign calves continue to "die" remarkably well.

For the time of year, the demand for pigs has been sluggish state; nevertheless, the currencies have slightly proved.

Although the numbers of English beasts and sheep not increased in the same proportion as foreign, an impr has gained ground that prices have seen their highest for some time. The stock in all quarters is doing remar well, disease is fast disappearing, and there is an abunda keep on hand for winter use.

The imports of foreign stock into London have been as llows :—

	Head.
Beasts	15,465
Sheep	43,611
Lambs	2,014
Calves	2,183
Pigs	2,942
Total	66,215

Comparison of Imports.

ept.	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
5	12,553	67,640	2,152	3,192	9,434
4	14,444	45,760	2,441	3,161	5,701
3	11,923	48,021	2,759	3,213	2,691
2	7,219	32,154	1,830	2,257	2,546
1	6,759	34,870	1,366	2,323	3,214
0	8,120	36,381	1,039	2,200	3,188
9	6,966	37,783	1,358	1,744	1,895
8	5,999	25,488	717	2,735	2,472
7	7,346	24,090	198	1,953	2,067
6	7,084	20,605	3,000	2,772	1,559
5	7,161	22,744	613	1,646	2,266

The aggregate supplies of stock exhibited in the Great tropolitan Market have been as under :—

	Head.
Beasts	26,560
Sheep	120,430
Calves	1,984
Pigs	3,120

Comparison of Supplies.

	Beasts.	Cows.	Sheep.	Calves.	Pigs.
......	27,040	530	151,440	3,324	3,287
......	30,910	560	137,490	3,184	3,700
......	27,710	534	131,100	2,458	2,657
......	28,074	526	139,270	2,364	3,031
......	26,950	520	142,990	2,260	3,626
......	27,080	500	144,450	3,309	2,922
......	24,560	514	145,480	1,891	2,771
......	27,446	533	131,150	3,210	4,281
......	25,734	534	117,715	2,220	2,585
......	24,002	485	132,014	2,452	2,800
......	24,667	540	152,120	2,477	3,921

e arrivals of beasts from our own grazing districts, as s from Ireland and Scotland, thus compare with the two ous years :—

	Sept. 1864.	Sept. 1865.	Sept. 1866.
om—			
colnshire, Leicestershire, &c.	12,500	8,000	6,500
r parts of England	4,000	2,800	3,790
tland	1,362	135	35
nd	161	1,150	335

ef has sold at from 3s. 6d. to 5s. 6d.; mutton, 3s. 8d. to 4d.; veal, 4s. 4d. to 5s. 6d.; and pork, 4s. to 5s. 2d. per to sink the offal.

Comparison of Prices.

	Sept., 1860.	Sept., 1861.	Sept., 1862.
	s. d. s. d.	s. d. s. d.	s. d. s. d.
f from .	2 8 to 4 8	2 10 to 4 8	3 0 to 4 8
tton ...	3 4 to 5 4	3 2 to 5 4	3 8 to 5 4
l	4 0 to 5 4	3 6 to 4 8	4 0 to 5 0
k	4 0 to 5 2	4 8 to 5 0	3 10 to 4 10

	Sept., 1863.	Sept., 1864.	Sept., 1865.
	s. d. s. d.	s. d. s. d.	s. d. s. d.
f from .	3 4 to 5 0	3 4 to 5 4	3 4 to 5 8
tton ...	3 6 to 5 4	4 0 to 5 8	4 4 to 6 8
l	3 8 to 4 8	4 0 to 5 0	4 4 to 5 8
k	3 6 to 4 0	3 6 to 4 10	4 2 to 5 8

ir average supplies of meat have been on sale in Newgate Leadenhall, and the trade has ruled very inactive, at the exed quotations :—Beef, from 3s. 4d. to 5s.; mutton, 3s. o 5s. 6d.; veal, 4s. 2d. to 5s. 4d.; pork, 4s. to 5s. 2d. per by the carcase.

SOMERSETSHIRE.

r about the past three weeks we have not been free from more or less, for twenty-four hours together, and 5 inches' ll has been recorded. Spring beans are still out, and, with little exception, they are soft, and more or less grown at butts where kept up in stetch, and, where laid, they are badly so. A few have been mown, but they are quite unfit for sale. Barley, which is nearly half out, and a considerable portion uncut, has grown out even when standing, and must be kilndried. Oats, also nearly half out, are partially grown, and will be wasted. Potatoes have gone fast lately, but the crop is a large one. Clovers are waiting for fine weather to admit of their being cut, and are suffering from the delay and heavy rain we have had. Roots have benefited, and the grass has grown; but now everything wants a drier atmosphere and warm sun, the rays of the latter having been greatly intercepted. Except in one locality, where the cattle plague lingers but does not spread, we are free from that scourge. No sheep cases, and only one flock in the county has been announced; but they were all killed many weeks since.—9th month, 21st.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ABINGDON FAIR.—The principal trade of the fair is in horses of the useful kind, rather than of the superior. A good deal of business was done. There were very few sheep, and owing to the probibitions, in consequence of the cattle plague, there were no cows. Sheep very dear.

BACKWELL FAIR, usually an important one, was this year entirely confined to horses. There was a large attendance, and a good supply of cart-horses and colts. The demand was active, and a fair amount of business was done. Prices of beef are firm; best qualities make 12s. 6d. to 13s. 6d. the score, with a good demand. Mutton is a steady trade, with but little alteration in prices, which are generally from 8½d. to 9d. the lb. Bacon pigs are a fair trade, at 10s. 6d. to 10s. 9d. the score. In store cattle a fair private trade is doing at very high prices.

BALLOCH HORSE FAIR.—The demand was dull, though, before the close of the market, a large amount of business had been transacted. For good young horses and heavy draught animals, of fashionable and substantial make, there was a steady demand, at prices equally good with those current at Falkirk. The best class of draught horses sold at from £30 to £50; animals not able for country work, at from £14 to £20; little Highland horses, at from £10 to £25; three and four year-old colts, at from £18 to £35. Harness horses at from £15 to £30, and ponies for riding at from £15 to £24.

BLANDFORD FAIR was very dull, owing to the weather. There were but 5,200 sheep penned, which is far below the average. Some remarkably fine animals were stocked, for which high prices were obtained. The business was very brisk. The average prices were: Lambs, from 35s. to 43s.; ewes, 44s. to 50s.; wethers, 55s. to 62s. Horses were not largely exhibited; but some good serviceable cart colts were disposed of at good prices, averaging about £38 each. The business in the pig fair was brisk, and most of those exposed for sale met with purchasers at good prices.

BRIDGNORTH FAIR.—There was a large number of sheep penned, in good condition. Store wethers realized from 48s. to 52s.; good mutton from 8½d. to 9½d. per lb. Lambs went at 9½d. per lb. A large quantity of good store pigs sold from £3 10s. to £3 15s. each. Best bacon pigs went at 6d., and porket pigs at 7d. per lb. In the horse-market there was a fair exhibition of useful animals. Agricultural horses sold from £20 to £30 each, hacks from £8 to 15 guineas; ponies at all prices from £5 to £10 each. But little business done.

CARLISLE HORSE FAIR.—The horses were principally cart horses and horses for farming purposes, and were generally of an inferior quality. The number in the market was very large, but the attendance of dealers was small; however, a good number of sales were effected, at prices ranging from £20 to £30 each.

DRIFFIELD FAIR.—We had upwards of 8,000 sheep shown: the prices were 3s. to 4s. per head more than was obtained at the last fair. Fat sheep sold at 8d. to 9d. per lb. A number of fat beasts were sold by auction, and averaged nearly £17 per head.

DUNDEE FAIR.—Only a few fat beasts were exhibited, and these brought very high prices. Of Irish store cattle there was a large show, and sales were readily made at high prices. A capital lot of three-year-old bullocks sold at £19 a-head; ten two-year-olds, at £15 each; and a lot of ten two-year-olds at £12 each. Seventeen two-year-old bullocks sold at £16 12s. 6d., and twelve at £14 10s. each. The demand for home cattle was not so brisk. Only twenty-five milch cows were in the market. The animals were of a superior description, and the prices ranged from £12 to £18. Nearly all the cattle in the market changed hands. The horse market was poorly supplied. Half-a-dozen excellent animals sold at prices ranging from £25 to £40. A good many work horses changed hands; but only a few of the inferior animals were sold, the prices being from £8 to £15.

DUNSE DRAFT EWE TRYST.—The lamb fair, which was made up of seconds and thirds, was uncommonly stiff, and business was only promoted by sellers making large concessions; but still sales were slowly made. The market for draft ewes was not so languishing, though generally described as being stiff, with a decline in value from last year. Half-bred and three-parts-bred ewes would be back from 1s. 6d. to 2s. 6d.; Cheviot ewes, from 3s. to 3s. 6d.; and lambs of all descriptions about 4s. each. A few lots of lambs and some ewes remained at the finish. In the cattle market a number of Galloways, two or three lots of Irish cattle, and a lot of Highland stots were exhibited; but the business done was of little public interest, and no prices can be given that could form a basis of future operations.

DURHAM FAIR.—There was a larger number of horses than has been shown at this fair for some time. Many of the animals were of an inferior quality, and ranged in price from 30s. to £10. There was not a great demand for horses of any class, though good ones were offered for sale at between £35 and £50. A good attendance of dealers; but only a few first-class animals changed hands. A large number of lambs were shown, and had ready sale, at good prices.

FINDON FAIR.—There was a larger number of sheep and lambs penned than for many years past, there being no less than 10,000, nearly twice as many as last year. In the morning some lots were sold so briskly at high prices that it was anticipated it would be a real business fair, but afterwards a great drag set in, and in order to effect sales, owners had to take less than they were offered in the morning. There was a brisk demand for 5,000, but the number penned being 10,000, there were not buyers for the whole. A great many were taken away unsold. The price of lambs ranged from 25s. to 35s. (at which latter figure some good useful animals might be purchased), and to 42s., the highest price obtained. Mr. F. Bushby sold lambs at 42s., Mr. Hampton, Findon Park, lambs at 38s., Mr. G. Hards, Cobden, ewes at 50s., lambs at 36s., Mr. Hards, Findon, lambs at 36s., Mr. Parlet, Bury, ewes at 53s. 6d.

GLASTONBURY FAIR.—There was a good show of horses and colts, but not many changed hands. Pigs were in abundance, and selling from 10s. 6d. to 11s. per score, and some of the colts realized £25 each.

GLOUCESTER MONTHLY MARKET.—The number of sheep was unusually large, and the demand was equal to the supply. The trade was brisk, but a reduction in prices had to be yielded; best-quality mutton realized 9d. per lb. There were some good pigs for sale, and trade generally was brisk. The following were the ruling prices: Mutton from 8d. to 9d. per lb., pigs from 10s. 3d. to 11s. per score.

HOWDEN GREAT HORSE FAIR.—Horses began to arrive on Friday se'nnight. The total number received by rail up to Tuesday morning would be full 600 or more. Many of these were from very distant towns, and a good number from Ireland. The trade in Irish horses is a largely increasing one. Strong and hardy, they are highly esteemed for breeding purposes, and make very useful hacks. Many of them sell for high prices. The business doing on Monday was principally confined to hunters and carriage horses. Good prices were readily obtained for first-class stock—in one instance as much as £300 was given by an eminent London dealer. Another bought six of one farmer at an average of nearly £90 each. On Tuesday the show of horses was much larger, although the amount of business doing, excepting in really A 1 animals, was not so extensive as we had expected. A fine steeple-chaser sold for £200. Good hunters and roadsters were most inquired after. The best class of coach horses were rather scarce. Several foreign dealers purchased some fine five-years old brood mares at from sixty to eighty guineas. The figure of most of the sales was from £30 to £50. Nags or roadsters, smartly made, and that would go well, were in pretty good demand; those of a lighter class, for ladies' riding hacks, did no appear to be greatly sought for. Strongly-built powerfu horses, suitable for heavy large-town work or London brewer realized high prices. Inferior agricultural horses were numerously represented, but met with only a slow sale. A larg number of Irish horses were shown. Many of them were ver good-looking, and likely to become very useful animals. In addition to the high prices mentioned as being obtained o Monday, three horses were sold for about £600. As an instance of greatly enhanced value in a short space of time, horse bought in May last for £20 sold again in June for £40, an has just now realized £120. It is somewhat difficult to gi a full and complete list of the prices generally obtained. Th following may, however, be taken as something like the ave age:—Well-bred hunters 60 to 100 guineas; first-class do. o good pedigree and known blood, 100 to 300 guineas; coa horses, well broken for private carriages, 55 to 75 guinea seasoned horses and well-matched young cattle settled down double harness, 70 to 80 guineas; strong active ditto, suitab for phaetons, &c., 40 to 50 guineas; saddle horses, neat-g and well-bred, 40 to 60 guineas and upwards; second-rate do, 30 to 40 guineas; thick-set active cart horses, suitable fo heavy vans, brewers' drays, and London team work, 40 to guineas; ditto, suitable for agricultural purposes and contra tors' work, 20 to 35 guineas; strong three-year-old-colts, 3 to 40 guineas; two-year-old ditto, 20 to 30 guineas. The tw last-named classes have lessened materially in value during th last few years. Horses of inferior quality at corresponding lower prices.

HORNCASTLE HORSE FAIR.—There was a large a tendance of buyers, and all animals of superior class realiz high figures. Colts for harness made from 45 to 60 guinea and many were consigned to London. Cart horses of hea breeds were sold at rather low prices, and there was a slugg demand for secondary sorts for farmers' work and road tea Well-made cobs for riding obtained a quick sale, and very co pact-made Yorkshire bred weight-carrying horses fetched 3 to 40 gs.

KEIGHLEY FAIR.—Prices of pigs did not rule hig Gilts for breeding sold at from 30s. to £3 each, breeding s with litters at from £8 to £10. The Shropshire Downs b longing to Mr. Jowett, of Black Hill, near Keighley, were s by auction; the first for £7 10s., a one-shear ram; and th second for £6 12s. 6d., a two-shear. Shropshire ewes at a average of 47s. 6d. Lambs, from the same flock, at an av rage of 55s. Mr. Wm. Laycock offered some fair Leicest lambs, which sold at an average of £2 15s. Mr. Edwin Holm had a very good show of Leicesters; ewes sold at an averag of about £4, ram lambs at about £3. Upon the whole th market was not so good as was expected.

KERRY (Wales) FAIR.—The show of sheep was larg although scarcely an average. There was not an average a tendance of buyers. Business opened very dull, but improv before 11 o'clock, and brisk sales were effected at fair pric although not so high as at the fairs a month ago. There we very few South-downs or Shropshire-downs offered, the she being almost confined to Kerry hill, and a few Welsh hill shee The former fetched from 35s. to 42s. per head. A few Shr shire rams fetched £4 to £5 each. There was a small show pigs, and they sold at rather improved prices, especially th porkers.

KINCARDINE O'NEIL FAIR.—Good fat met a fair s at about former prices, say 7d. to 8½d. per lb.; all other kin of lean sheep for keeping were considerably back in price side what they were two months ago. In the cattle mark Mr. Littlejohn, Westside, sold four stots at £19 10s. eac Mr. Durward, a quey at £17 10s.; Mr. Wilson, Blackhi two stots at £29; Mr. Watt, Kintocher, a stot at £27; M'Combie, Tillyfour, bought two stots at £30 10s. the p A few lots of polled cattle were bought to go south at £10 to £14 each.

KNIGHTON FAIR.—The show of sheep was very Good fat wethers made from 8d. to 9d. per lb.; store brought prices quite equal to August fair, and most of th penned changed hands, although there was not that activity the market that we have seen at this fair in former y The supply of store pigs was large; but prices were lower, very little doing. A few good cart horses were disposed of good prices.

LEWES GREAT SHEEP FAIR.—There were abo

26,000 penned. Unfortunately, the attendance of buyers was not so large as usual, consequently the amount of business was below the average. Lambs went pretty freely, at about the late rates; but ewes hung very much on hand, the demand being slack. In order to sell, slight reductions were submitted to. The following were amongst the sales effected: Mr. Woodman, ewes 49s. Mr. Thomas Sampson (Ninfield), 80 ewes 44s. 6d., culls 40s. Mr. Hodson, 50 wether lambs 28s., 35 culls 25s. Mr. Stapley (Firle), 130 wethers 46s. Mr. George Gibbs (Ringmer), 97 wethers 45s. Mr. Hobbs (Ringmer), 44 tegs 44s. Mr. Warnett (Horsted Keynes), 74 tegs 45s. Mr. Trower (Hamsey), 32 cull lambs 25s. Mr. Uridge, 30 lambs 33s. Mr. Wm. Green (Ovingdean), 50 lambs 31s. Mr. Christmas (Bexhill), 40 wether tegs 48s. Mr. Farncombe (Bishopstone), 53 wether lambs 35s., 25 culls and ewes 44s. Mr. W. Noakes (Mark Cross), 34 lambs 30s., 110 wether tegs 46s. 6d., 100 wether lambs 34s. 6d. Mr. Booker (Eastoathly), 60 wethers 33s. Mr. Lamb (Wilmington), 100 ewes 44s. Mr. G. Kenward (Ashburnham), 50 wether lambs 35s. Mr. B. Waters (Eastbourne), 200 lambs 42s., and culls 36s. Mr. Cowley (Preston), 50 ewes 30s. Mr. R. R. Verrall (Falmer), 200 ewes 47s. Mr. Lades (Woodingdean), 100 lambs 38s. Mr. Thatcher (Chiddingly), 50 ewes 43s., 30 culls 24s. Mr. Willard (Newhaven), 100 lambs 32s. Messrs. Saxby and Noakes, ewes 46s. Mr. Ellis (Haxted), 100 ewes 51s., 60 lambs [illegible] Mr. W. Woodhams (Lullington), 100 ewes 43s., cull ewes 42s. Mr. Tanner, (Patcham), 70 lambs 39s. M. Hallett (Brighton), 260 wether tegs 48s. Mr. Evans (Alfriston), cull lambs 35s. Mr. Gilliat (Eastoathly), lambs 33s. Mr. Holmwood (Rodmell), cull ewes 42s., cull lambs 25s. 6d. Mr. E. [illegible]ne (Berwick), lambs 34s. and 37s. Mr. Brown (Patcham), lambs 40s. The last was the highest price of the fair, and the shepherd took the ribbons.

LINCOLN FAIR.—The only attraction left was the horse fair, which was a very meagre one, some groups of Irish animals and Welsh ponies constituting the staple of the fair. Buyers seemed scarce.

LUDLOW FAIR.—A larger quantity of sheep than that exhibited has not been seen here for many months past, the pens being quite inadequate to contain them. The prices obtained for fat and store sheep were therefore below previous quotations. The former realised on an average about 8d. per lb., and store ewes were sold at from 40s. to 70s. per head. Pigs were lower than at the last fair. Small stores were sold at 15s. and upwards, and strong bacon pigs realized as much as £6. There was a good show of horses numerically, chiefly for agricultural purposes; but first-class animals were scarce, and very few of either kind changed hands. For the better class of cart-horses £10 was asked, and one or two good stiff cobs were offered at from £12 to £20.

LUTTERWORTH FAIR was well supplied with sheep, which were sold at rather lower prices. Store ewes 45s. to 55s., fat ditto 50s. to 65s., lambs 35s. to 45s., shearling wethers 50s. to 60s. per head. Mr. Topham, of Welford, and Mr. Williams, of Carlton-le-Moorland, exhibited Lincoln rams for sale by private contract, and disposed of a few at prices ranging from £8 to £12. Mr. H. Bond's improved Lincoln rams were sold by auction, and 20 averaged £6 10s. 3d. each. The horse fair was small and thinly attended.

MOFFAT FAIR.—The bulk of the Cheviots was of very ordinary quality. There was a fair demand for good rams, but inferior and ordinary were in little request. The market, on the whole, was one of the dullest that has occurred for many years, the drenching rain causing matters to be worse. Prices ranged for one-year-old Cheviot rams from £2 to £8, two-year-old rams £3 to £10, aged sheep £3 to £8, and in rare cases up to £20, blackfaced tups £3 to £5 for one-year-olds, and £3 to £8 for two-year-old sheep, long-woolled rams £5 to £6 10s.

NEWTON-STEWART MONTHLY MARKET.—The number of cattle exhibited was 380 of all ages. Owing to the high prices sought by holders, the market was extremely dull, and several lots left unsold. Two-year-olds ranged from £7 to £12 each, and stirks from £4 to £7 10s.

PARTNEY FAIR.—The horse and foal fair was a mere shadow of what it had formerly been. A few foals were exhibited, and good animals sold well.

PENRITH FORTNIGHTLY FAIR.—Sheep brought from 7½d. to 8½d., and lambs from 8d. to 9d. per lb.

READING FAIR.—There were no horned cattle, and the horses were rather few in number, and of an inferior description. 150 horses were, however, offered at Tompkins's Repository, and animals described with warranties met with a ready sale, but inferior animals were a dull trade. Prices ranged as follows: Good London cart-horses from 45 to 65 gs., horses for agricultural purposes from 18 to 35 gs., cart-colts from 17 to 25 gs., hunters from 45 to 150 gs., carriage-horses from 50 to 90 gs., harness horses from 18 to 35 gs., cobs and pairs from 12 to 25 gs.

WALTHAM FAIR.—Unbroken cart colts and fillies found purchasers in the southern dealers, commanding remunerative prices to breeders for sound useful animals. Good and seasonable cart-horses were also in request for the London brewers and teamsters. Useful hackneys and carriage horses were also in request, whilst for inferior descriptions indifferent prices were obtainable.

WORCESTER FAIR.—There was not a head of horned stock, owing to the cattle-plague restrictions; but a capital supply of sheep and rams, which fetched high prices. Mr. J. Villar sold some Cotswold rams at prices varying from 8 to 15 guineas, and Mr. Hemmings sold some rams at from 4 to 13 guineas.

IRISH FAIRS.—THOMASTOWN: Fat cows £16, two-and-a-half year old heifers £13 to £15, strippers £9 to £14, two-and-a-half year old bullocks £9 to £12, one-and-a-half year old bullock £5 5s. to £7, one-and-a-half year old heifers £5 5s. to £8, fat sheep 55s. to 68s., store sheep 35s. to 50s., lambs 27s. to 36s., store pigs 36s. to 60s., bonnives 18s. to 40s., fat pigs (on the day before the fair) 54s. per cwt.—NAVAN: Best specimens of beef were sold at 7d. per lb., and few lots sent away unsold; second quality rated from 5½d. to 6d., and inferior from 4½d. to upwards. One lot of prime bullocks brought £24 10s. each. Mr. Rorke sold a lot of prime heifers at £21 10s. (the best in the fair). A splendid lot of heifer beef sold at £22 10s. each—the highest figure in the fair. Three-year-old store heifers fetched from £13 to £14 10s., two-year-olds from £8 10s. to £11 10s., yearlings from £4 to £6 10s. each. Two-year-old bullocks sold from £10 to £13 10s., and yearlings worth notice from £5 to £8 per head. In the springer department Mr. Bishop paid from £18 to £24 for good ones. There were few inferior springers in the fair, and the lowest prices were from £11 to £13 10s. The supply of sheep was large. Good wethers rated from 60s. to 65s., or 8d. to 9d. per lb. Ewe mutton realized from 7d. to 7½d. Lambs from 30s. to 36s. each, except in some instances, where Liverpool dealers picked up some prime ones from 40s. to fully 44s., a-piece. There was a good supply of pigs of every classt and increased demand. Best bacon rated from £2 10s. to fully £2 17s. 6d. per cwt., sinking the offal. Pork was also in good supply, and rated at about 6½d. per lb. on the foot. Store pigs sold from 45s. to 60s. each, the latter figure being given for strong ones. Slips from 28s. to 36s. Bonnives from 18s. to 25s., being an advance of 2s. to 3s. per head on late rates. The horse fair was only indifferent as regards quality. The highest prices were £40 to £60 for a few fine young nags for hunting purposes.—CARLOW: Three-year-old bullocks and heifers were from £13 to £16; two-year-olds, £9 to £10 and £11; there were not many fat beasts on sale, price 59s. to 64s. per cwt.; inferior quality, 50s. to 55s. Springers and milch cows were bought up at from £15 to £20. Best mutton was from 8d. to 8½d.; second quality, 7½d. There was a brisk demand for pigs at 56s. per cwt.; forward stores, 56s. to 61s.; bonhams, 12s. to 18s.—DUNDALK: The fall on yearling cattle was considerable, few of them bringing more than £2 5s. each; but for two-year-olds and upwards there was a good demand, ranging from £7 and upwards to £10. Milch cows in good demand, some selling as high as £15. Sheep, on an average, brought 8d. per lb., and lambs 9d. There was very little well-fed beef, which was rapidly bought up at 7½d. to 8½d. per lb. Bacon pigs scarce and dear, but suckers were very plentiful and very cheap, considering former prices; they averaged 14s. each. CASTLEBAR: Sheep and lambs were looked after; ewes of good breed averaged from 40s. to 48s., lambs from 22s. 6d. to 32s. 6d.—KILDARE: Ewes were in pretty fair demand, and sold from £2 to £2 12s. 6d.; very fine wethers sold at 56s.; and excellent well-bred ewes, not in very good condition, £2 2s. 6d. On the whole, the sheep fair was very dull; and in many cases flocks were driven home sooner than sell at what was considered a sacrifice. The cattle fair was well attended, and business very brisk; the following prices may be quoted: Fat cows £15 to £18, strippers £9 to £15 10s., two and a-half year old bullocks £9 to £12, ditto heifers £12 to £13. Pigs were in good demand, and fat ones fetched fully 55s. per cwt., sinking offal: bonhams, runners, &c., were also dear. This being a noted horse fair, there was a large number in, principally three and a-half year olds untrained, and in most cases of a superior class: large figures were obtained for this class, and there was as much as 55 guineas paid for a splendid bay colt.—BANAGHER: The supply of sheep was very large, and in a condition fair: buyers were timid in commencing, and sellers did not wish to submit to decreased prices without a struggle; those, however, who sold earliest sold to the best advantage. Ewes were not in the demand expected, and were 4s. to 5s. under last year's prices; wethers experienced a decline of 5s. to 7s., but many lots were disposed of. Good supply of fat sheep, and demand moderate. Mutton fetched 6½d. to 7½d. Compared with last year, the sales were very small indeed. The cattle fair was by far the largest ever remembered in Banagher. Good cattle, and anything, whether heifers or bullocks, in condition, sold well, particularly the latter, and beef rated at from £3 to £3 5s. Three years old heifers brought from £13 to £17 10s., two years old ditto from £12 to £14, one-and-a-half ditto from £7 to £8, yearlings from £5 to £6. The horse fair was badly represented. Colts were in abundance, and were to be had from £6 and up to £25, £30, £35, and even £40. Some very nice ones could be had at £25 and £30; choice animals of that class could be had for £40. Three years old brought from £12 and £16 to £40. The demand for two years old was very poor, and realised little more than £16 or £17. The supply of first-class horses was very deficient. Weight-carrying hunters in request. The average was 60 guineas, and one or two were disposed of at upwards of 100 guineas.—CAVAN: Springers were very dear, particularly those near the dropping, averaging from £8 to £10, and some as high as £16 10s. each. As to sheep, there was a fair supply, averaging at from £2 2s. to £3 10s. each. There were very few bacon pigs, which realised from 50s. to 60s. on the foot, sinking offal.—KILKENNY: Three years old and four years old bullocks £11 to £16 per head, two years old £7 5s. to £9 10s., and yearlings £5 5s. to £7 each; two years old heifers £10 to £14 10s., yearlings £6 to £8 5s.; new milch cows and springers £13 to £16 10s. for first-class; ewes and wethers 55s. to 62s. per head, hoggets 43s. to 48s., and lambs 30s. to 37s. 6d. each. Store pigs rather slack; strong slips 42s. 6d. to 50s. each, runners 28s. to 33s.; and suckers 15s. to 27s. 6d. per pair.—BANTRY: There was a fair show of cattle, and a very good number of pigs. The cattle, principally small animals of the Kerry breed, found ready buyers at pretty high prices. Pigs were very slack, with the exception of prime bacon pigs, and this description found ready buyers at an average of 52s. per cwt. Weanling bonhams were disposed of at about from 16s. to 20s. a-piece, of which there was a very large number, about 20 cart loads, on sale. The sheep fair was very brisk: the greater part of the business was done in store sheep, which were picked up at about an average of 6d. per lb. on foot.

PRICES of BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—	s.	s.	CHEESE, per cwt.—	s.	s.
Friesland	124 to	126	Cheshire	72 to	84
Jersey	94	110	Dble. Gloucester	74	78
Dorset	126	130	Cheddar	76	84
Carlow	—	—	American	66	74
Waterford	—	—	HAMS: York	90	10
Cork	—	—	Cumberland	90	100
Limerick	—	—	Irish	90	100
Sligo	—	—	BACON:—		
FRESH, per doz., 11s. 0d. to 15s. 0d.			Wiltshire	74	80
			Irish, green	66	72

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Sept. 24.—Fine goods are dearer.

Dorset Butter	128s. to 130s.	per cwt.
Devon	114s. to 116s.	„
Fresh	13s. to 16s.	per dozen lbs.

CARMARTHEN BUTTER MARKET, (Saturday last.)—There was again a great paucity of supply in Butters to this market for the last fortnight, and from the commencement of the season to the present time we have not recived half the usual average. It is difficult to account for this: there must be a deficiency in the make this season, or the farmers are holding on speculation, which some of the large farmers are apt to do, and often to their ultimate loss. In consequence of scarcity the market was cleared of every cask early in the day at 116s. per cwt. for first-class quality.

BLANDFORD CHEESE FAIR.—Cheese was scarce, there being only about seven tons brought in, most of which was disposed of at current prices.

CHIPPENHAM GREAT MONTHLY MARKET.—There was a splendid show, between 200 and 300 tons being pitched, which quite filled the market. The whole was sold at the following prices: Cheese, broad doubles 60s. to 76s. per cwt., new prime Cheddar 74s. to 84s., loaves 64s. to 78s., ditto thin 60s. to 66s.

GLASGOW, (Wednesday last.)—The supply of cheese comes in freely, and a fair business doing at late rates. There were 45 tons passed the weigh-house, and several lots left unsold. New Dunlop 60s. to 66s., new Cheddar-made 66s. to 70s., skim-milk 26s. to 29s. per cwt.

GLOUCESTER CHEESE MARKET.—There was a good supply, the quantity weighed amounting to about 55 tons, and the demand was fair. Best singles fetched from 61s. to 64s., seconds from 54s. to 58s. per cwt.

NORTHAMPTON CHEESE FAIR.—Little cheese was shown, and this was all by dealers, and not by the producers. The price of good Leicester ranged from 9d. to 11d., and the average price was 10d. A few Stiltons were on sale, but a slow trade was done; skim-milk cheeses were scarce, and the usual "Whitleather" cheese factors were very limited in number.

READING CHEESE FAIR.—A quantity of cheese was pitched in the market-place, but the principal show was at the grocers' establishments, where trade was brisk for good and fine qualities, but middling were dull of sale. Prices were as follows: Fine pale Cheddar 88s. to 96s., good ditto 70s. to 89s., fine double 70s. to 78s., good ditto 60s. to 68s., common 54s. to 58s.

WORCESTER CHEESE FAIR.—The following prices are being asked: Skims from 25s. to 36s. per cwt., two-meal from 42s. to 52s., and best from 60s. to 70s.

NEWGATE AND LEADENHALL POULTRY MARKETS.—Geese 6s. to 7s., goslings 6s. to 7s., ducks 2s. 3d. to 3s., ducklings 2s. to 3s., tame rabbits 1s. 3d. to 1s. 9d., wild ditto 1s. to 1s. 3d., pigeons 6d. to 8d., partridges 1s. 3d. to 1s. 9d., hares 2s. 6d. to 4s., leverets 2s. 6d. to 4s., grouse 2s. 3d. to 2s. 9d. each; Surrey fowls 8s. to 10s., ditto chickens 6s. to 8s., barn-door fowls 4s. to 6s. per couple. English eggs 10s., French ditto 7s. 6d. to 8s. per 100; fresh butter 1s. to 1s. 3d. per lb.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, Sept. 24.—The accounts respecting the disease are unfavourable. The market is fairly supplied with Potatoes, the transactions in which have been to a fair extent at about late rates. There were no foreign arrivals.

Regents	60s. to 100s.	per ton.
Rocks	50s. to 70s.	„

COUNTRY POTATO MARKETS.—DONCASTER, (Saturday last): The supply of Potatoes was large, but in consequence of the rapid spread of the disease amongst them—many of those on offer being much affected—sales were only made for immediate consumption, prices ranging from 6s. 6d. to 8s. per load of 18 stones. MANCHESTER, (Saturday last) Potatoes 6s. 6d. to 12s. per 252lbs. YORK, (Saturday last). This market was better supplied than it has been for some weeks past, and the prices remain at 6s. per tub of 280lbs., and 6d. per peck retail. The disease among Potatoes is reported to be spreading.

FLAX.—The value of flax imported year by year is very considerable. In 1854, this value was £3,384,916; in 1855, £3,317,122; in 1856, £3,638,194; in 1857, £3,524,767; in 1858, £3,020,879; in 1859, £3,769,058; in 1860, £3,836,770; in 1861, £3,423,137; in 1862, £5,205,992; in 1863, £4,271,059; in 1864, £5,323,053; and in 1865, £5,369,719. These totals embrace, it should be added, both dressed and undressed flax.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

September began very favourably, after the heavy rains of August; but it scarcely lasted thus a week before the weather resumed its turbulence and storms, and, though we have occasionally had a few days of interval, rain has continued in the ascendant. The consequence has been most disastrous to all the backward districts, as we do not expect so much as three-fourths of the harvest was secured. Nearly everywhere it has been alike, throughout the United Kingdom and Europe; and many farmers will suffer severely, if not already overtaken with ruin. The wheat has been sadly deteriorated, and bad condition, with sprouting, has ensued; while the barley, which was lately so favourably estimated, has been discoloured, sprouted, and in some instances well-nigh destroyed. Beans bear rough weather better; but, unless October be very fine, the gatherings will be soft, and unfit for use till after Christmas. The hints we dropped to farmers on last month's serious decline, if acted on, have saved 5s. per qr. to holders, as wheat has recovered to fully this extent; and though some reaction may ensue, if it should now take up fine, the inability of France and America to make up any English deficiency becomes plainer as time works on, and we should not be in the least surprised at a further rise of 10s. before next harvest. Though esculents generally have profited by the heavy downfall, it is the reverse with potatoes; and the complaints this year seem universal, both as regards the United Kingdom and the Continent, perhaps with the exception of Scotland. The French markets have all along been rising, till their rates have exceeded our own. Belgium and Holland, as well as all Germany, have felt the stimulus of foreign advices, till there is not a port in Europe which seems to leave any margin for business with this country. Such a state of things cannot last; and when the present period of excitement is over, we shall be able to take a calmer view of future prospects. Let us be thankful, in the meantime, that so much has been gathered; that the cattle-plague and cholera are subsiding; and that there is this year a crop of maize, both in America and Europe, which greatly exceeds the average, if it be but safely housed. The following prices were recently quoted at the several places named: The best red wheat at Paris was 60s., and white 63s. per qr.; red at Antwerp was 54s., at Liege the same, at Louvain 63s., at Courrai 61s. per qr. Weak Zealand wheat at Rotterdam was quoted 57s. 6d., red at Hamburgh 56s., new high-mixed at Danzic 56s. to 57s., red at Stettin 50s. 6d. per qr. At Odessa the qualties varied from 36s. to 41s. for red. Quotations at New York for spring Milwaukie wheat were 56s., for amber 65s., for winter red 69s., and for new white Michigan to 74s., all per qr. of 480lbs. free on board. It was expected that stocks at the close of the season would be unusually low.

The first Monday in Mark-lane commenced on the back of fair English and foreign arrivals of wheat. The show of samples from Essex and Kent during the morning was short, and much of it in poor condition. Though on the previous day there had been heavy rain, and the weather through the week was broken, there was but a moderate attendance of millers, who refused to pay any advance on the former rates; and eventually these were accepted by factors. Holders of foreign insisting on higher terms, business was checked, and almost nothing done. Floating cargoes, however, sold freely, at fully as much money. With a continuance of very rough weather through the week, which did much local damage where the gatherings were late, many markets noted an improvement of 2s. to 3s. per qr.; and all had a very unsettled appearance, with a tendency upwards. Liverpool was 2d. to 3d. dearer per cental on Tuesday, with the same further increase on Friday. New qualities at Birmingham rose 4s., and old 2s. per qr.; but Hull was only 1s. to 2s. per qr. dearer. Leith noted an advance of 2s. per qr., and Aberdeen of 1s. to 2s.; but Glasgow was only 1s. per qr. dearer. Wheat was firm at Dublin and Cork.

On the second Monday there was less English wheat, and but a short supply from abroad. The persistence of bad weather, and the advance in the country, told this morning on the short arrival from Kent and Essex; and factors were able to make sales at fully 3s. to 4s. per qr. advance, there being much damage by floods in low situations. Foreign qualities having been relatively dear, from a knowledge of the defective quality of the new samples, factors could not generally establish a rise of more than 2s. per qr. The same advance had been freely paid on floating cargoes through the week, and was well supported to-day, with an extensive business. Though the rain was not so heavy this week, its continuance more or less forced prices further up, through the country, the rise varying from 2s. to 5s. per qr. Boston and Newark obtained the extreme advance. Hull was 3s. per qr. dearer, as well as Leeds: and very many places were 3s. to 4s. per qr. higher. Liverpool, for the week, was 4d. to 6d. per cental higher. Aberdeen was 1s. to 2s. per qr. higher, Leith 3s. per qr., and Glasgow improved 1s. per boll, or 1s. per qr. At Waterford the rise was 6d., and at Limerick 1s. per barrel: Dublin being 1s. to 2s. higher per barrel on native, and 1s. on foreign sorts.

On the third Monday the returns of English wheat were very small, but those of foreign liberal. The show this morning on the Kentish stands was very scanty, and only small on those of the Essex factors, and a further advance of 2s. per qr. was generally demanded at the opening of the market; but the rise having been considerable, millers seemed determined not to follow it up, and only bought slowly, at an an advance on English samples of 1s. per qr. In the foreign trade Russian qualities, which constituted the chief arrivals, were no dearer; but dry Baltic red was fully 1s. per qr. higher, and extra qualities of Dantzic were several shillings per qr. dearer. Cargoes afloat were up 1s. per qr., with a lively inquiry. The weather this week became improved and of a winterly temperature, but wore worse at the close. The rise was not much followed up; but Ipswich, Hull, and Rochester were 2s. per qr. dearer for dry parcels. At Boston some decline was noted in new, and several markets were dull, in consequence of the inferior condition of samples, with some appearance of sprout, though the chief injury was done to barley. In Scotland the advance did not exceed 1s., which was but slowly paid at Glasgow and Edinburgh. In Ireland there was no stimulus to prices; but the Dublin market was firm both for native and foreign qualities, though flour was heavy.

The fourth Monday commenced on moderate supplies, both English and foreign. There were very few fresh samples in the course of the morning from Kent, and only a moderate quantity on the Essex stands, much of the new being in such poor condition that millers passed it by. But all dry samples were fully 1s. per qr. dearer, though business was far from brisk. With a large attendance from the country, it was expected a considerable trade would be done in foreign at advanced rates. This expectation, however, was not realised, and in very few instances more money was obtained. Floating cargoes had previously been in active demand, at full rates.

The imports into London for four weeks were 21,721 qrs. English, 59,355 qrs. foreign, against 22,182 qrs. English, 103,990 qrs. foreign in 1865. The general averages commenced at 50s. 10d., and finished at 47s. Those of London began at 52s. 3d., and closed at 51s. 11d., and therefore do not show the fluctuations of the market. The imports into the kingdom for four weeks ending September 15 were 1,371,901 cwt. wheat, 123,670 cwt. flour. The exports from London were only 50 qrs. wheat, 280 cwt. flour.

In the flour trade the country supplies have been more abundant, and a fair trade has been transacted at 2s. to 3s. per sack advance on last month's closing prices. American barrels have been in more demand, and rather dearer, from the scarcity of stock, though previously high. French and Spanish sacks have gained in value about 2s. per sack, and the quotations in France make exportations profitless, as the quotations in Paris (say 45s. per sack) are more than the same qualities would fetch in London. The imports into London for four weeks were 78,108 sacks country-made, 8,363 sacks 5,343 barrels foreign, against 70,103 sacks English, 1,085 sacks 9,668 barrels foreign in 1865.

Much of the barley crop being caught by the long-continued rough weather, and great injury resulting therefrom, the price of malting sorts has materially risen, fair quality having become worth 46s. per qr. The great falling off too of foreign imports, and the prohibition of exports from the Danubian Principalities, have equaliy stimulated the inferior sorts, till what not long ago was only worth 25s. or 26s. has become worth 33s. to 34s. per qr.; and, had it not been for the comparative cheapness of Indian corn, still higher rates would have been paid. We cannot, however, expect this state of things to last, as shipments of new from the Continent are already on their way, and farmers will not fail to avail themselves of such a fine opportunity of selling to advantage. The imports into London for four weeks were 3,036 qrs. British, 9,981 qrs. foreign, against 4,365 qrs. English, 20,131 qrs. foreign in 1865. The state of the barley trade, and small stocks of old malt, have caused a rise in its value of about 2s. per qr.

Though good supplies of oats continued up to the fourth Monday, this grain has gradually been improving in value, the rise for the month being 1s. 6d. to 2s. per qr., more especially on fine qualities, which were never abundant, even in the times of heaviest exports. 36lbs. Russian are now worth 19s., and other qualities in proportion; while sweet old Swedish feed weighing 43lbs. would bring 27s. per qr. or more. Russian imports will now be falling off, and we may see some further enhancement of values; as, notwithstanding the late improvement, the stocks in granary cannot yet obtain cost price. The imports into London for the four weeks were 6,110 qrs. English, 162 qrs. Scotch, 265 qrs. Irish, 190,573 qrs. foreign, against 8,360 qrs. English, 396 qrs. Scotch, 3,086 qrs. Irish, 134,946 qrs. foreign in 1865.

Beans, which were rapidly declining, with the appearance of fine weather have partially recovered; but the advance has scarcely exceeded 1s. per qr., rates still ruling high, and more foreign coming on. Though the present wet weather is much against them, the damage is not estimated to be great, and with drying winds for a few days they may be hardened enough for stacking, and improve subsequently. The imports into London for the four weeks were 563 qrs. English, 11,339 qrs. foreign, against 773 qrs. English 2,261 qrs. foreign in 1865.

As regards peas, there has been very little alteration of value, excepting in old foreign white, which have been in demand for horse feed, and consequently have risen about 2s. per qr. The new crop has not appeared yet in quantity, but the samples sent have been of fair quality. We anticipate no great change as regards this grain. The imports into London for four weeks were 2,604 qrs. English and 4,586 qrs. foreign, against 1,405 qrs. English and 1,251 qrs. foreign in 1865.

The supplies of linseed have kept lessening, and prices, both of seed and cake, have consequently been fully supported, notwithstanding the high range of the former.

The long prevalence of wet has cut off the expectation of a crop of cloverseed, and the small stocks of foreign which were overleft last season have consequently been held at advanced rates.

Holders have been further encouraged to this course by the continual rise in France, as the northern provinces have suffered, and the southern are not reported to yield well. Mustard-seed has undergone great fluctuations, 20s. per bush. having been paid. Many samples, both old and new, have at last appeared, and altered the aspect of this trade. For canary-seed also higher prices have been demanded; but winter tares have been neglected all through, and can still be had in plenty, at 5s. per bushel.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR IN MARK LANE.

		Shillings per Quarter.	
WHEAT, Essex and Kent, white... old 47 62...new		43 to	57
„ „ „ red ...... „ 45 55... „		42	54
Norfolk, Lincoln, and Yorkshire, red		42	54
BARLEY ......35 to 40......Chevalier, new		42	46
Grinding......33 36......Distilling		38	42
MALT, Essex, Norfolk, and Suffolk		60	70
Kingston, Ware, and town-made		60	70
Brown		54	58
RYE		29	32
OATS, English, feed 20 to 26......Potato		25	31
Scotch, feed ......21 27......Potato		26	31
Irish, feed, white 19 22......Fine		23	27
Ditto, black ......18 21......Potato		24	28
BEANS, Mazagan ...40 42......Ticks		40	42
Harrow ......42 46......Pigeon		45	49
PEAS, white, boilers..39 42 Maple 39 to 42 Grey, new		36	38
FLOUR, per sack of 280lbs., Town, Households		47	50
Country, on shore ......36 to 38 „		40	44
Norfolk and Suffolk, on shore		36	37

FOREIGN GRAIN.

	Shillings per Quarter.	
WHEAT, Dantzic, mixed ......54 to 57......old, extra	59 to	64
Königsberg ......51 57......extra	58	59
Rostock ......52 58......fine	58	60
Silesian, red......49 54......white	52	58
Pomera., Meckberg., and Uckermrk. ...red old...	52	56
Russian, hard, 44 to 47...St. Petersburg and Riga	47	50
Danish and Holstein, red	46	50
French, none......Rhine and Belgium	52	56
American, white 00, red winter 00 to 00, spring	00	00
BARLEY, grinding 31 to 33....distilling and malting	40	42
OATS, Dutch, brewing and Polands 20 to 29......feed	18	24
Danish and Swedish, feed 21 to 26.... Stralsund...	21	27
Canada 19 to 21, Riga 21 to 25, Arch. 19 to 20, P'sbg.	20	27
TARES, Spring, per qr. ...... small 00 ...... large ...	00	00
BEANS, Friesland and Holstein	38	43
Königsberg ......40 to 43...Egyptian, none	00	00
PEAS, feeding and maple...36 38...fine boilers	38	41
INDIAN CORN, white......31 33...yellow	30	32
FLOUR, per sack, French..38 42...Spanish, p. sack	38	42
American, per brl......24 27...extra and d'ble.	28	30

IMPERIAL AVERAGES

For the week ended Sept. 15, 1866.

Wheat	60,328⅝ qrs.	47s.	0d.
Barley	6,439½ „	37s.	1d.
Oats	2,150¼ „	24s.	8d.

COMPARATIVE AVERAGES.

	WHEAT.			BARLEY.			OATS.		
Years.	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
1862...	58,909⅝ ...	55	10	2,320¼ ...	36	7	7,276⅞ ...	24	7
1863...	78,909½ ...	44	1	9,287⅛ ...	34	7	6,355¾ ...	21	8
1864...	65,643 ...	42	4	5,316⅝ ...	32	1	5,475⅝ ...	21	9
1865...	62,441½ ...	44	7	6,179 ...	30	10	5,329⅞ ...	20	11
1866...	60,328⅝ ...	47	0	6,439½ ...	37	1	2,150¼ ...	24	8

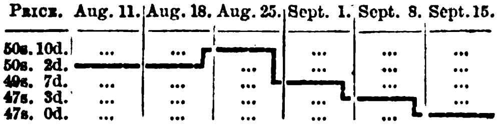
AVERAGES

For the last Six Weeks:	Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.
Aug. 11, 1866	50	2	35	2	26	6
Aug. 18, 1866	50	2	34	9	26	6
Aug. 25, 1866	50	10	33	8	26	6
Sept. 1, 1866	49	7	35	1	25	3
Sept. 8, 1866	47	3	36	1	25	2
Sept. 15, 1866	47	0	37	1	24	9
Aggregate Average	49	2	35	4	25	10
Averages last year	44	7	30	10	20	11

LONDON AVERAGES.

Wheat	1883 qrs.	51s.	11d.
Barley	396 „	41s.	1d.
Oats	40 „	29s.	10d.

FLUCTUATIONS in the AVERAGE PRICE of WHEAT.



PRICES OF SEEDS.

LONDON, Monday, Sept. 24.—The inquiry for red seed continues brisk, and holders require higher rates; at present buyers will not give further advances. The trade remains firm at last week's rates. In white seed there is nothing passing. Sellers of Trefoil ask higher values. Cutler and Barker, Seed-factors.

BRITISH SEEDS.

Mustard, per bush., white	8s. to 12s.
Canary, per qr.	45s. 52s.
Cloverseed, red	00s. 00s.
Coriander, per cwt.	00s. 00s.
Tares, winter, new, per bushel ......5s. 0d.	5s. 6d.
Trefoil	18s. 20s.
Ryegrass, per qr.	00s. 00s.
Linseed, per qr., sowing 00s. to 00s., crushing	60s. 68s.
Rapeseed, per qr.	54s. 58s.
Linseed Cakes, per ton	£9 10s. to £10 10s.
Rape Cake, per ton	£5 10s. to £6 0s.

FOREIGN SEEDS.

Coriander, per cwt.	16s. to 20s.
Cloverseed, red 46s. to 54s., white	60s. 80s.
Trefoil	18s. 23s.
Ryegrass, per qr.	25s. 26s.
Hempseed, small —s. per qr., Dutch	00s. 40s.
Linseed, per qr., Baltic 58s. to 60s...Bombay	68s. 00s.
Linseed Cakes, per ton	£9 10s. to £11 0s.
Rape Cake, per ton	£5 0s. to £6 0s.

HOP MARKETS.

BOROUGH, Monday, Sept. 24.—Our market is not brisk at present, and prices have declined, although the reports from the plantations have been so unfavourable during the past week, the yield in every instance falling short of the estimates formed by the best judges, in some cases to the extent of one-fourth and in others one-third of the anticipated produce; the result of which will be to reduce our crop to below half of last year's. Mould and lice have increased in Mid and East Kent, and the quality of the hops coming from these districts must be exceedingly poor. Our present currency is as follows:

Mid and East Kent ...	135s. to 231s.
Weald of Kent	135s. to 168s.
Sussex...	120s. to 175s.
Yearlings	90s. to 140s.
Farnham and Country	160s. to 235s.

Accounts from Belgium are not so good as last week. New York advices to the 7th inst. confirm previous reports of the extraordinary increase of mould and lice in the various hop sections.

ANNUAL REPORT OF THE WORCESTER HOP MARKET.—In addressing you at this period of the year we wish we could have given a more cheering account of our prospects for the coming season. The plantations throughout the whole of Worcestershire and Hereford were attacked with the aphis blight with such severity in June, that it was then felt the crop would be a small one: a succession of rain, however, partially cleansed the bine, and upon well-farmed lands there is a tolerable crop, and every planter will pick something, so that the present calculation is about a fourth of last year, or equal to £7,000 or £8,000 of old duty, much depending upon the weather during picking, which is now in full operation. The quality and colour of our hops will be fine, and there will be some growths of unusual excellence. At our great annual fair on the 19th, only 24 pockets passed the public scale, some of which not being properly dried, were sold for immediate use at £8 10s., but £10 was paid for only middling quality, and as much as £12 demanded for nice flavoured, well-managed, and nosy samples. We hope that these prices will form no criterion as to future values when the supply is better: still, considering the active competition for good Kents and Farnhams at the prices daily paid for them, we are of opinion that all our good growths will be readily taken, and prove the best value of anything sold.—John Kitchin and Co.

COVENT GARDEN MARKET.

LONDON, Saturday, Sept. 22.

Supplies are still well kept up, but owing to the dulness of trade prices are receding, except in the case of sound samples of potatoes, which are dearer than they were last week. Pears consist of Louise Bonne of Jersey, Gratioli, and William's Bon Chrétien. Kent cob nuts are now arriving very plentifully. Apples, too, are sufficient for the demand. Pine-apples and hot-house grapes are also plentiful. Vegetables continue abundant. Flowers chiefly consist of orchids, asters, calceolarias, pelargoniums, fuchsias, balsams, cockscombs, mignonette, and roses.

FRUIT.

	s.	d.		s.	d.
Apples, ℔ bushel......	6	0	to	8	0
Currants, ℔ sieve ...	0	0		0	0
Figs, ℔ dozen	1	0		2	0
Gooseberries, ℔ qrt.	0	0		0	0
Grapes, ℔ lb............	2	0		6	0
Lemons, ℔ 100	8	0		14	0
Nuts, Cob, per 100lbs.	35	0		40	0

	s.	d.	s.	d.
Nectarines, ℔ doz. ...	2	0	6	0
Melons, each............	3	0	6	0
Oranges, per 100	0	0	0	0
Peaches, per dozen...	2	0	8	0
Pears, ℔ dozen	2	0	4	0
Pine Apples, per lb.	3	0	5	0
Strawberries, per lb.	0	0	0	0

VEGETABLES.

	s.	d.		s.	d.
Artichokes, per dozen	2	0	to	4	0
Asparagus, p. bundle.	0	0		0	0
Beans, Kid., ℔ ½ sieve	2	0		3	6
Beet, per dozen	2	0		3	0
Brocoli, per bundle ...	0	0		0	0
Cabbages, per dozen...	1	0		2	0
Carrots, per bunch ...	0	4		0	6
French, per bunch,	0	0		0	0
Cauliflowers, per doz.	2	0		6	0
Celery, per bundle ...	0	9		1	6
Cucumbers, each	0	3		0	9
Endive, per dozen......	1	6		3	0
Garlic & Shallots, ℔ lb.	0	10		0	0
Herbs, per bunch	0	6		0	0
Horseradish, ℔ bundle	2	6		4	0
Leeks, per bunch	0	3		0	0
Lettuces, per score ...	1	0		1	6
Mint, per bunch	0	3		0	4

	s.	d.		s.	d.
Mushrooms, ℔ pottle	1	6	to	2	0
Must. & Cress, ℔ punn.	0	2		0	0
Onions, ℔ doz. bun. ...	3	0		6	0
Pickling, per quart	0	0		0	0
Parsley, per ½ sieve...	1	6		2	0
Parsnips, per dozen...	0	0		0	0
Peas, per quart	0	6		1	0
,, per bushel	3	6		5	0
Potatoes, York Regents, per ton	70	0		95	0
Rocks, per ton..........	60	0		70	0
Flukes, per ton	105	0		125	0
Kidneys, per cwt.......	6	0		10	0
Radishes, per 12 bund.	0	6		1	0
Rhubarb, per bundle	0	0		0	0
Savoys, per dozen	0	6		0	0
Spinach, per bushel ...	2	0		3	0
Turnips, per bunch ...	0	3		0	6

TIMBER.

BALTIC FIR TIMBER.

Per load 50 cubic feet.

	s.	d.		s.	d.
Riga	65	0	to	67	0
Dantzic and Memel, Crown	75	0		85	0
Best middling......	65	0		73	0
Good middling & second	55	0		65	0
Common middling	45	0		50	0
Small, short, and irregular...........	40	0		50	0
Stettin......................	45	0		55	0
Swedish	38	0		43	0
Small	35	0		37	0
Swedish & Norway balks......................	30	0		35	0

AMERICAN PITCH PINE.

	s.	d.	s.	d.
United States	0	0	0	0

BALTIC OAK TIMBER.

	s.	d.	s.	d.
Memel, crown	110	0	130	0
Brack	80	0	100	0
Dantzic and Stettin, Crown	90	0	120	0
Brack & unsquar'd	50	0	70	0

WAINSCOT.

Per log 18 cubic feet.

	s.	d.	s.	d.
Riga, crown	95	0	105	0
Brack	70	0	80	0
Memel and Dantzic, Crown	75	0	85	0
Brack	55	0	65	0

DEALS AND BATTENS.

Per Petersburg standard hundred.

	£	s.	£	s.
Archangel & Onega	12	0	14	0
Seconds	9	0	10	10
Petersburg	10	0	12	0
Wyburg	9	0	9	10
Finland and hand-sawn Swedish	7	0	8	0
Petersburg & Riga white deals	8	10	9	10
Memel and Dantzic, Crown red deals...	12	0	13	0
Brack	8	0	9	0

	£	s.		£	s.
Christiana & Sannesund deals, white and yellow............	12	0	to	13	0
Second do............	9	0		10	10
Dram & Frederickstadt battens, do.	8	10		9	0
Dram 6½-inch do....	7	0		8	6
Gothenb'g, gd stocks	9	10		10	0
Common	8	10		9	0
Gefle and Swedish 14-feet deals	9	10		10	10
Swedish deals and battens, long mill-sawn	9	0		10	10
Dantzic, cr'wn deck, per 40-feet 3-inch	1	0		1	6
Brack	0	12		0	18

LATHWOOD.

Per cubic fathom.

	£	s.	£	s.
Petersburg	7	0	8	0
Riga, Dant., Memel, and Swedish.........	5	0	6	10

FIREWOOD.

Per cubic fathom.

	£	s.	£	s.
Swedish, red deal ends	3	15	4	0
Norway, red & white boards	3	0	3	10
Rounds and slabs	2	15	3	5

OAK STAVES

Per mille pipe.

	£	s.	£	s.
Memel, crown.........	150	0	205	0
First brack	130	0	160	0
Dantzic, Stettin, & Hambro' full-siz'd crown	150	0	160	0
Canada, stand. pipe	80	0	85	0
Puncheon, ℔ 1,200 pieces	24	0	25	0
Bosnia, single brl., ℔ 1,200 pieces	25	0	27	0
United States, pipe	30	0	55	0
Hogshead, heavy and extra	30	0	40	0
Slight	22	0	23	0

FLAX, HEMP, COIR, &c.

	£	s.		£	s.
Hemp, Petersburgh clean, per ton	31	0	to	0	0
Outshot.............	30	0		0	0
Half-clean	29	0		0	0
Riga, Rhine	35	0		0	0
Manilla..................	45	0		55	0
East Indian, Sunn	15	0		21	0
Jute	7	5		24	0

	£	s.	£	s.
Coir yarn	35	0	72	0
Junk	26	0	30	0
Fibre	24	0	28	0
Flax, Riga	0	0	0	0
St. Petersburgh, 12 head	44	0	47	0
9 head	35	0	37	0
Egyptian	0	0	0	0

HIDE AND SKIN MARKETS.

MARKET HIDES:	s.	d.		s.	d.
56 to 64lbs.............	0	2¾	to	0	3
64 to 72lbs.............	0	3		0	3¼
72 to 80lbs.............	0	3		0	3½
80 to 88lbs.............	0	3½		0	4
88 to 96lbs.............	0	4		0	4½
96 to 104lbs.............	0	4½		0	4¾

	s.	d.		s.	d.
Horse hides, each ...	9	0	to	10	6
Calf skins, light	2	6		4	0
Full	7	0		0	0
Polled sheep	0	0		0	0
Half-breds	0	0		0	0
Downs	0	0		0	8
Shearlings	4	6		6	0
Lambs	3	6		6	0

CHICORY.

LONDON, Saturday, Sept. 22.

About an average business is doing in chicory, at last week's currency.

Deliverable from Wharf in Bags, exclusive of Duty.

	£	s.		£	s.
Harlingen......	£8	0	to	£10	10
Bruges..........	0	0		0	0
Antwerp	£8	10	to	£11	0
Hamburgh ...	0	0		0	0

ENGLISH WOOL MARKET.

CITY, Monday, Sept. 24.—Since our last report only a limited business has been transacted in home-grown Wool. On the whole, however, prices have been well supported. The demand for export is trifling, although the stocks held on the Continent are limited.

Current Prices of English Wool.		s.	d.		s.	d.
Fleeces—Southdown hoggets............	per lb.	1	7½	to	1	8
Half-bred ditto	,,	1	9½		1	10½
Kent fleeces........................	,,	1	8		1	9
Southdown ewes and wethers	,,	1	7		1	8
Leicester ditto	,,	1	7		1	9
Sorts—Clothing	,,	1	6		1	10½
Combing	,,	1	5½		2	0

BRADFORD WOOL MARKET.—The partial improvement in the weather, and the livelier aspect of the cotton market, have at least prevented any further depression in our market. The business of the day is very limited, but still there is more inquiry than there has been of late, and a little more has changed hands during the week. The consumption keeps up, and spinners, though very chary of their purchases, are still to some extent forced by their requirements into the market. There have too been instances of speculative buying. The tendency of prices to grow weaker has been checked, and the value of wool is unchanged since last Thursday. Holders generally are quite willing to sell at current rates, and fine weather only is wanted to bring an improved demand.—*Bradford Observer.*

LEEDS (English and Foreign) WOOL MARKETS, Friday.—There is a fair consumptive demand for English wool and prices are unaltered. The price is so much above an average that there is little inducement to hold large stocks, and there must be still a good deal of wool in the hands of the farmers and collectors. Colonial wool is without alteration. Prices have been well sustained during the sales, and some sorts have become rather dearer.

GLASGOW WOOL MARKET, (Saturday last.)—There is no improvement to note in the wool trade during the past week. There has been an almost total absence of business. Prices are, so far, unaltered, but few or no transactions have taken place. If we had a short period of fine weather so that harvest operations might be successfully carried out, we would probably see a considerable improvement.—*F. H. McLeod.*

MANURES.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the importers' stores, or ex ship (50 tons) £12 5s. to £12 10s. per ton.
Bones, £6 10s. per ton.
Animal Charcoal (70 per cent. Phosphate) £5 per ton.
Coprolite, Cambridge, whole £2 5s. to £2 8s., ground £2 15s. to £3
Suffolk, whole £1 18s. to £2, ground £2 10s. to £2 12s. per ton.
Murlate of Potash, £13 to £14 per ton.
Nitrate of Soda, £15 to £15 10s. per ton.
Sulphate of Ammonia, £14 to £15 per ton.
Gypsum, 30s. per ton. Superphosphate of Lime, £5 to £6 5s. per ton
Sulphuric Acid, concentrated 1·845 1d. per lb., brown 1·712 0¾d.
Blood Manure, £6 5s. to £7 10s. per ton. Dissolved Bones, £6 15s. p. ton.
Linseed Cakes, best American barrel £11 5s., ditto bag £10 10s. p. ton;
English £11 to £11 10s. Rape Cake, £5 15s. to £6 per ton.

E. Purser, London Manure Company,
116, Fenchurch Street, E.C.

	£	s.	d.		£	s.	d.
Guano, Peruvian	£12	7	6	to	£0	0	0
Do. Upper do.	6	15	0		7	0	0
Malden Island	0	0	0		0	0	0
Bone Ash	0	0	0		0	0	0
Brimstone, 2d&3rd	0	0	0		0	0	0
Saltpetre, Bengal, 2 per cent.	0	0	0		0	0	0
Nitr. of Soda, p. ct.	0	10	9		0	11	0
Cloverseed, N.Am. red, new per cwt.	2	5	0		2	10	0

Linseed Cake, per ton—	£	s.	d.		£	s.	d.
Americ., thin, bgs.	£10	0	0	to	£0	0	0
Do. in brls.........	0	0	0		0	0	0
English............	10	10	0		10	15	0
Cotsd. Cake, decort.	0	0	0		0	0	0
Linsd. Bomby, p. qr.	3	10	0		3	11	0
Rapeseed, Guzerat	2	18	0		3	0	0
Niger..................	0	0	0		0	0	0
Tallow, 1st P.Y.C.	2	6	6		2	7	0
,, super. Norths	2	5	6		2	6	0

SAMUEL DOWNES and CO., General Brokers,
Exchange Court, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk.

		£	s.	d.
Prentice's Cereal Manure for Corn Crops	per ton	£8	10	0
Mangold Manure..	,,	8	0	0
Prentice's Turnip Manure..	,,	6	10	0
Prentice's Superphosphate of Lime	,,	0	0	0

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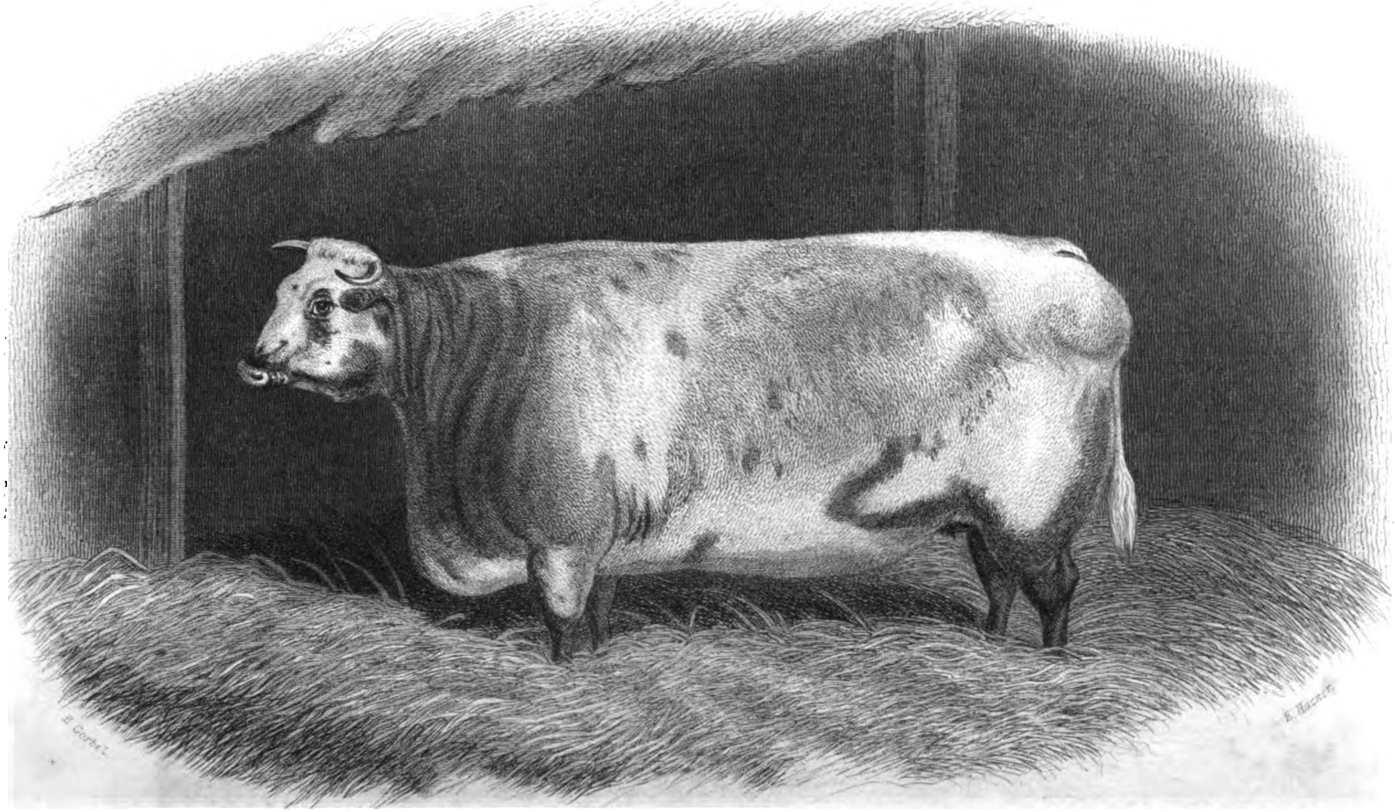

A Shorthorn Heifer.

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London Published by [illegible] & [illegible] Strand 1860

C.H. Spalding E. Hacker

The Mountain Dew

PLATE III.

A SHORTHORN HEIFER.

THE PROPERTY OF THE EARL OF RADNOR, OF COLESHILL, WILTS.

Octavia, a roan heifer, bred by Lord Radnor, and calved on August 17th, 1862, was by Wolfsbane (15516), out of Octave, by Jack Tar (11603), her dam Olympia (bred by Mr. Beazley) by Roman (2561), — Zephyr, by Beaufort (1696). Wolfsbane, bred by Sir Charles Knightley, was a son of Friar's Cowl, out of Maiden's Blush; and the student of the Herd Book will gather from this pedigree that the Smithfield Club heifer had some of the best blood in her veins from the Wiseton and Fawsley crosses, while the O family has been very famous at Coleshill for a happy union of milking properties, fine character, and good quality.

At the Smithfield Club Show in December, 1865, Octavia took the first prize of her class, £25, as the best shorthorn heifer, and also the silver cup of £40, as the best heifer or cow in any of the classes. Lord Radnor, who was in great force, also won another silver cup of £20 for the best pen of pigs, whose portraits have already appeared in *The Farmers' Magazine.*

PLATE IV.

THE MOUNTAIN DEW.

ENGRAVED BY E. HACKER, FROM A PAINTING BY C. B. SPALDING.

The rage for grouse-shooting, at present so great, not likely to change, like many other fashions. he fine air, the freedom of scenery, and all the her *agrémens* accompanying this amusement, ust always make it the most fascinating kind of ort, in the way of shooting, which the British les, or indeed almost any country, can afford. ne bird, too, in beauty and game-like appearance, not to be equalled. In fact, as long as grouse d heather exist, and the nature of man is imbued th the same love for sport and manly exercise as now is, grouse-shooting will be one of our favour- relaxations from the graver cares of life. Al- ough, like others, I am excessively fond of this ort, yet I care little for numbers of slain, and, ere following it independently and alone, am not cupied solely by the anxiety of bagging so many ce. My usual plan when I set out is to fix on me burn, some cool and grassy spring, or some l summit which commands a fine view, as the extremity of my day's excursion. To this point then I walk, killing what birds come in my way; and after resting myself and dogs, I return by some other route. Undoubtedly the way to kill the greatest number of grouse is to travel one certain tract of ground closely and determinedly, searching every spot as if you were looking for a lost needle, and not leaving a yard of heather untried. This is the most killing system, as every practised grouse-shooter knows; but to me it is far less attractive than a good stretch across a range of valley and mountain, though attended with fewer shots. I am also far more pleased by seeing a brace of good dogs do their work well, and exhibiting all their fine instinct and skill, than in toiling after twice the number when hunted by a keeper, whose only plan of breaking the poor animals in, is to thrash them until they are actually afraid to use half the wonderful intellect which Nature has given them.—*Field Notes, by St. John.*

WHEAT SOWING.

BY CUTHBERT W. JOHNSON, F.R.S.

The improved cultivation of wheat can hardly be considered at a more opportune season than the present. It is needless to urge the importance of the inquiry. By taking a retrospective view of what has been in bygone years accomplished, we may be well cheered on in so valuable a pursuit. Let us ever remember that we are certainly growing, upon an average, double the quantity of wheat on a given space that our forefathers did in the days of the Plantagenets. There are no symptoms as yet of this onward march being stayed. We must not, however, at the onset forget that in all these great researches we are surrounded by mysteries and difficulties, and can only—as in all cases where vegetable life is concerned—attain any degree of useful knowledge by patient and laborious observation.

Three great branches of the inquiry may on the present occasion usefully engage our attention: First, the soil on which the wheat is grown; second, the choice of seed; and, third, the manure to be employed.

As regards the soil, it is a fact well known to the reader that on most soils wheat is very commonly grown with success after red clover. And as it has been found that on many soils clover now ceases to grow profitably, it promises useful results to endeavour to account for this failure, and to search for its cure. Now, on this very important subject two of our philosophers have recently published the result of their labours. In the last number of the Journal of the Royal Agricultural Society, Professors Buckman and Voelcker have furnished two valuable reports. These include entirely different branches of the inquiry, Professor Buckman (vol. ii. p. 446) having devoted his attention to the choice of the seed and mode of cultivation, and Professor Voelcker (*ibid.* p. 472) to the best dressings for the clover plant.

Professor Buckman, after having carefully examined the ten varieties of clover which are cultivated in our island, and whose seeds, as supplied to the farmer, are commonly mixed together, thus sums up his observations on the clover sickness:

"For some years we have heard a great deal of land being incapable of growing clover, or, as it is usually expressed, being 'clover sick,' and it must be confessed that in some districts there is an increased difficulty in growing clover. I am disposed to attribute this difficulty to the fact that much of our seed is derived from warmer climates, and perhaps from richer soil, but principally to the mode of cultivation commonly adopted; the barley, sown at the same time, forcing it in the first year into a weak and spindled young plant. The effect is much the same as that pointed out by our Dorsetshire Burns as the result of allowing no playground for children:

'The children will soon have noo pleäce
  Vor to play in, an' if they do grow,
They will have a thin mushroom feäce,
  Wi' their bodies so sumple as dough.
But a man is a meäde of a child,
  An' his limbs do grow worksome by play,
An' if the young child's little body's a spiled,
  Why the man's wull the sooner decay.'

"Now, if this be so where so many years follow as a corrective to the cramping system, can it be wondered that the second half of the history of the clover plant should be affected by the smothering and drawing up of the first half?

"The mischief is augmented in the second year by the growth of weeds, not only in those native to the soil, but those too often sown with the seed.

"Some years since I instituted a series of inquiries into this matter, and then found that samples of clover-seed as received from different seedsmen were shamefully dirty. Like other inspectors of nuisances, I received no small amount of ill-will for my pains; but I have sufficient reward in the fact that for the last five years I have not met with such dirty samples as I then exposed, although within this year I have examined as many as fifty specimens, obtained from both 'large and small' seedsmen, and have others in hand.

"For some years at Cirencester we kept up plots of different clovers, and found that when drilled and kept clear from weeds the annual red clover would keep a good plant for three or four years, and that by digging and sowing again, a good crop could be got, and once we could point to beds of perennial clover, that had been kept up for as much as seven years in good condition. Indeed, I consider the common to be as nearly perennial as almost any perennial plants. But if it be attacked by weeds and parasites, it will with difficulty be grown at all.

"But the soil and mode of cultivation is a common cause of the so-called clover sickness. On the oolites of the Cotheswolds, on which we have perhaps 4 inches of soil and then the solid rock, we constantly hear of this complaint; indeed, on the College farm of oolitic sand, all the land was said to be clover sick, and so long as the plough was not allowed to go deeper than 4 inches, it undoubtedly was so. But when the impression gained ground that these 4 inches had been worked out, it was determined to use the steam plough for our roots, to the depth of 12 inches; then followed the barley, to be succeeded by clover; and the crop obtained 2½ tons of hay to the acre was attributed to this method of cultivation. I have now the same promise in another field with the same treatment, and begin to think that deep cultivation for roots is a present cure for clover sickness, and therefore, so far from waiting the prescribed eight years for another crop of clover, I have pursued my own course, independently of my predecessor, in each instance eliciting the remark, 'Who would have thought it?'

"I look then upon the subject of clover sickness as one dependent upon the following precautions:

"1st. A judicious change and choice of seed.

"We inquire as to the soil whence we get our seed-barley and wheat, but whoever asks this with regard to clover?

"2nd. The rejection, as a rule, of foreign seed, more especially if from a warmer country.

"3rd. Clovers should be self-sown to be perfect, but if sown with grain we should at all events take care to sow clean seeds in clean land; weeds, added to the hindrance by corn, will be too much for any plant grown in the same way, so that we might call land sick of any crop if similarly treated.

"4th. Deeper cultivation, if only to the extent of three or four inches; for if we go deeper, we have fresh capital to draw upon. Indeed, deep cultivation may be regarded as the renovator of the soil for the present generation."

The experiments of Professor Voelcker, with several artificial dressing for clover, were carried on upon various soils, and in different counties. The substances employed were:

1. Nitrate of soda.
2. Sulphate of ammonia.
3. Soluble phosphate in the shape of dissolved bone-ash or mineral superphosphate.
4. Common salt.
5. Muriate of potash.
6. Sulphate of potash.
7. Sulphate of lime.
8. Mineral superphosphate and nitrate of soda, mixed together in equal proportions.
9. Mineral superphosphate and muriate of potash, mixed together in equal proportions.

The result of the employment of the salts of potash was not such as to enable the Professor to confidently recommend their use generally, even when it is intended to grow plants which are known to require much potash for coming to perfection. And in his concluding remarks he tells us that, "where good farmyard manure can be obtained at a reasonable price, I have no hesitation in saying I believe it will be found the most efficacious and economical manure both for seeds and permanent pasture. Even at 12s. 6d. or 15s. per ton, I am inclined to think that first-rate dung will be found a cheaper manure than any mixture of artificials, however skilfully prepared it may be. But as in some places it is not possible to obtain a sufficient amount of ordinary dung at any price, and as it may be wished to give the seeds a dressing, I would suggest for the trial the following mixtures, the components of which may be purchased at an outlay of £2 per acre:

FOR CLOVER SEEDS ON LIGHT LAND PER ACRE.

2 cwts. of superphosphate costing	£0	12	0
1½ cwt. of Peruvian guano	1	0	0
1 cwt. of muriate of potash, or instead 2 cwts. of crude German potash salts costing ....8s. to	0	10	0
Total cost ....£2 to	£2	2	0

FOR SEEDS ON HEAVY LAND.

2 cwt. of superphosphate	£0	12	0
2 cwt. of nitrate soda	1	8	0
Total cost	£2	0	0

"If the land is in a poor condition, one-half more, or even double the quantity, of the preceding materials should be used; for on exhausted pastures it appears to be better to give at once a good dose of manure, whether natural or artificial, than to fritter away money in the purchase of small and altogether inadequate supplies.

"Before sowing, the artificial manuring mixtures should be diluted with as large a bulk of ashes as possible. With every bushel of the artificials at least three bushels of red ashes or burnt clay should be incorporated. If wood-ashes can be obtained at a reasonable price, they will form an excellent addition to a clover-manure. Coal-ashes are but a poor substitute for wood-ashes or burnt clay; however, in the absence of a better material, they may be used for diluting the artificials. In conclusion, I would recommend the dressings to be applied not later than the middle of February."

In carrying on any trials upon wheat, we must not forget how many circumstances must be taken into consideration before we can arrive at any reliable fact. Varying soils, seasons, and previous cultivation of the land must be carefully regarded; and there are, moreover, other influences most probably exerted upon our crops, which at present are little known to us. The results of the Rothamsted experiments which Mr. J. B. Lawes has recently published in the *Times* seems to support these conclusions. These researches it will be remembered have been continued upon the growth of wheat, on the *same plots*, for a long series of years. Their author tells us that "the following are the results obtained this year (1866) on some of the most important plots of the experimental field. The selection is the same as in former years, and this is the twenty-third wheat crop in succession on the same land. For comparison there is also given the produce of the three preceding years, as well as the average over the last fourteen years, during the whole of which period (and in some cases longer) the same description and quantity of manure have been applied year after year on the same plot:—

BUSHELS OF DRESSED CORN PER ACRE.

How manured each year.	Harvests.				Average of 14 years. 1852-1865
	1863.	1864.	1865.	1866.	
Unmanured.........	17¼	16	13¾	12⅜	15⅜
Farm-yard manure	44	40	37⅛	32⅝	35¾
Artificial manure...	53⅜	45¾	40⅛	29⅞	37¼
Ditto	55⅝	49⅞	43⅜	32⅛	39¼
Ditto	55⅛	51¼	44	32⅜	36⅛

WEIGHT PER BUSHEL OF DRESSED CORN, LB.

	1863.	1864.	1865.	1866.	Average
Unmanured.........	62·7	62·0	60·1	61·3	57·3
Farm-yard manure	63.1	62·5	61·6	61·7	59·8
Artificial manure...	62·6	63·1	61·0	61·0	59·0
Ditto	62·3	63·5	61·1	60·1	58·5
Ditto	62·1	62·6	61.5	60·6	57·8

"Thus the crop of 1866 is, under each of the very different conditions as to manuring, considerably less than that of either of the three preceding years, and also less than that of the average of the fourteen preceding years. The produce without manure, and that by farm-yard manure, are between three and four bushels, and that by each description of artificial manure is more still below the average of the fourteen years. Indeed, so far as the quantity of grain is concerned, the past season has been particularly unfavourable for the action of the artificial manures, and in this respect it presents a striking contrast to the three preceding years; but more especially to 1863, when exactly the same descriptions and amounts of artificial manure gave about 23 bushels more grain per acre than in the season just past. From the progressive decline in the produce from year to year since 1863, it will, perhaps, be supposed that the result is in great measure connected with a gradually declining condition of the land, and therefore not mainly the effect and the indication of variation in the productive character of the seasons. That the results are not due to the changing condition of the land, but to the changing character of the seasons, is, however, evident from the fact that several times during the last fourteen years the crops on these same plots have been as bad as, or worse than, in the present season. Thus, in 1852 they were worse, in 1853 much worse, and in 1860 very nearly equal, as the following figures will show. The respective plots gave:—

BUSHELS PER ACRE.

	1852.	1853.	1860.	1866.
Uumanured..............................	13⅜	5⅞	12⅞	12⅜
Farm-yard manure..................	27⅜	19⅛	32⅛	32⅝
Artificial manure	26¾	23⅝	27⅛	29⅞
Ditto	27⅛	23⅛	31⅝	32⅛

"The variation in amount of produce from year to year may therefore safely be taken as almost wholly referable to season.

"The quality of the grain, as shown by the weight per bushel, is seen to be considerably above the average of the last fourteen years.

"Turning from these experimental results to those obtained on my farm under ordinary management, I may mention that three separate fields gave this year 40, 42, and 46 bushels per acre respectively, against 38, 48, 48, and 51 bushels obtained in four last year, thus indicating a considerable decline in amount of produce. On the other hand, the weight per bushel is somewhat higher in each of the three cases this year than in either of the four last year.

"Upon the whole, I conclude that the wheat crop of 1866 will prove to be decidedly below an average, and, judging from the produce of both my experimental and ordinary crops, and the relation which has been observed between them and the crops of the country generally for many years past, I should estimate the deficiency at not less than 10 or 12 per cent."

The question of the most profitable kind of wheat is another important branch of our inquiry, which has long engaged the attention of the Royal Agricultural Society of England and the Highland Society of Scotland. Our great northern society has lately awarded three prizes for experiments on different varieties of wheat. These trials were made by Mr. Richardson, of Drylawhill; Mr. Thomson, of Kilmarnock; and Mr. P. Turnbull, of Pinkerton, in East Lothian. The trials were carried on during two seasons—1864 and 1865—and upon different varieties of wheat. The amount of the grain produced per acre will be found in the following table:

	Richardson.		Thomson.	Turnbull.
	Bush.	Lbs.	Bush.	Bush.
Hunter's old Scotch white wheat, 1864	34	60	33	30½
Ditto, 1865	37	19	59	43
The Hopetoun, 1864	34	61	33	32¼
Ditto, 1865	35	34	60	37
The Fenton, 1864	36	61	35½	39
Ditto, 1865	39	36	60½	40

The soil of Mr. Richardson is a heavy loam, that of Mr. Thomson a dark-brown clay loam, that of Mr. Turnbull a gravelly loam.

Some time since, Professor Buckman contributed a very valuable prize essay to the Royal Agricultural Society's "Journal," upon the roots of the wheat-plant (vol. xvii., p. 172). The effect of sowing the seed at different depths in the soil did not escape his attention. He fairly concluded that the nearer to one or two inches, in ordinary soils, seems to be the best. Petri sowed equal portions of seed at various depths. He found that—

½	inch came up in	11 days	......grew	⅞
1	„ „	12 days	......grew	all
2	„ „	18 days	......grew	⅞
3	„ „	20 days	......grew	¾
4	„ „	21 days	......grew	½
5	„ „	22 days	......grew	⅜
6	„ „	23 days	......grew	⅛

As to the *time* of sowing, a curious trial was made by Mr. Buckman. He drilled red Lammas wheat, on the same land, on the 14th day of each month, from June, 1851, to May, 1852. His reported results were:

		Height.		Length of Head.	
		ft.	in.		
June,	1851	3	5	3 in.	Clean straw.
July,	„	2	10	2	Ditto.
Aug.,	„	4	1	4	Ditto.
Sept.,	„	3	11	4	Ditto.
Oct.,	„	3	10	4	Rather blighted.
Nov.,	„	3	9	4	Ditto.
Dec.,	„	3	10	3½	Much ditto.
Jan.,	1852	3	10	3½	Ditto.
Feb.,	„	3	6	4½	Ditto.
March,	„	—		—	Failed, but some ears ripened.
April,	„	—		—	
May,	„	—		—	

The observations of the Professor upon the effect of climate upon the wheat-plant (and the same remark, in fact, applies to the whole of his elaborate essay) are worthy of the reader's careful study.

He remarks that, "although wheat is adapted in its varieties to almost every degree of temperature, succeeding better in temperate than in tropical heat, it is yet derived from a wild grass whose natural habitat may be said to be that of a warm climate. Hence, then, the wheat-plant has great powers of adapting itself to circumstances; and this is not only so as regards the world at large, but we shall see, on inquiry, that even the slight inflexions of difference presented in our own island—nay, even in the uplands and lowlands of a single county—have a decided influence on the growth of the wheat-plant.

"If we review the geography of a central county of England—for example, Gloucestershire—we shall see that it is divided into two districts, hill and vale: the flat valley of the Severn, extending from south to north for about thirty miles in length, and nearly twenty broad, has a range of hills on the eastern side, rising from the vale with a steep escarpment, thus forming the Cotteswold district, which presents variations in height to as much as 1,200 feet above the level of the sea. Now on these hills the prevailing sorts of wheat will be the hardier red varieties, whilst in the vale the finer white kinds are those planted on good, well-drained land; but in the stiff, unmitigated lias clays the heavy, woolly-eared winter wheat is much cultivated, on account of its enormous yield.

"In choosing wheat for seed, attention should always be paid to the circumstances of climate and soil. I have many times tried to grow the spelt wheats from India but have not succeeded in ripening it, though at first it grows away freely, and gives great promise.

"Seed-wheat should always be chosen from a poor soil for growth on a richer one, and from a cold climate for cultivation in a warmer. Acting contrary to this rule often induces disease and a shortness in the yield. In Gloucestershire the hill-farmer chooses seed from the exposed chalk wolds of Wilts, whilst the vale-farmer gets his seed from the hills. But in the same manner as spring-wheat may be cultivated into a winter variety, so may any sort of wheat become acclimatised by careful cultivation. This, however, sometimes entails a slight change of form; and hence have arisen tall and dwarf varieties, and early and late forms."

Such are the valuable results obtained by some of those who have so ably directed their attention to the wheat-plant. To them our gratitude is justly due for their labours. The harvest they have obtained should cheer us on to further efforts, and to the obtaining of still more valuable results. These experiments, we all know, are surrounded with difficulties, encircled by mysterious influences; but then we should remember the poor dwarf *native* wild wheat-plant of the East, and reflect upon the changes it has been long undergoing by the skill of the agriculturist. Such facts may fairly lead us to the encouraging conclusion that our wheat-harvests are yet to be profitably increased.

HELPING THE SOIL.—The good farmer does this. Nature does not always make a perfect soil—indeed but seldom. Then the farmer's aid comes in excellently. He is supposed to be a man of understanding; if not, he had better be employed in something that he has capacity for. The means to help a soil are not scant. What ground generally lacks is manure. Manure is the best one ingredient that can be applied, as it contains the principles of many others. It moistens soil; it mellows it; it drains it; it guards against frost and sun. It is for this reason that so much manure is used, and, comparatively little else. People will do without a sub-soil plough, without ditching, without a mowing machine, without even a horse rake; but they use manure, more or less. It is well for the land that this is so. Nature has made some soils too wet for farming purposes—though to meet her end they were properly made. The farmer need not be told that, to help this soil, he must drain it. He then gets the undeveloped richness. Pulverizing it and stirring it deeply, so that the heat and air can get down, is another great thing. These are the main things—simple, yet how little done! Nature gives you the soil; you help her, and she helps you in return—helps you while you are doing it. She keeps your ground moist when you mellow it; and she lets the air pass into it with its fertility, which she took from negligent barn-yards; and this fertility she leaves with the soil, so that the farmer and Nature are helping each other. Thus our farms are improved. How are they deteriorated? By just the opposite course—by neglect. The more we do for our farms, the more Nature will aid us; and thus the better will be our land. The truth is, we are only helping Nature at the best, and she pays us for what we do for her: the land is still hers: she forever holds the title-deed.—*Colman's Rural World.*

THE LABOUR QUESTION.

Every practical farmer is at the present time paying more attention to this important subject than any other connected with his business. The whole question is to him a mystery. Here we have been improving in our management, in accordance with the principles and practice of modern agriculture, for the past half-century, and still our labour-account is continually advancing. We adopt and use extensively every mechanical aid for economising labour, and yet our annual account for labour is on the increase. We thrash and dress by steam power; we cultivate by steam power; we reap by machinery; we steam and pulp, and cut our roots by the best mechanical inventions; we cut our chaff, bruise our grain, break our cake by the best and simplest mechanical contrivances; we horse-hoe our corn and roots; we work our lands with the best of modern implements—and notwithstanding all, our labour-account is heavier and heavier every year. How is this? One would naturally think that with all our modern improvements manual labour would in a great degree be supplanted; but the reverse is the undoubted fact. Manual labour—and particularly skilled labour—has been gradually advancing collaterally with an advancing agriculture. The managers of our steam-engines, our steam-cultivators, our thrashing-machines, our reaping-machines, &c., are entitled to a higher rate of wages than the mere workman. There is skill, and thought, and extra care necessitated in such managers, to say nothing of responsibility. No enlightened farmer will grudge this additional payment to them. But then every agricultural labourer partakes of a like benefit in a measure. Why is this? The foundation and root of all is, unquestionably, in a greatly improved and extended agriculture. It is simply a question of supply and demand. Modern agriculture very properly entails a much more liberal expenditure in labour and artificial management to achieve success than formerly; and it achieves it. I need not stay to point out the almost innumerable means and appliances brought into requisition in the management and feeding of stock, or in the culture and growth of our grain and root crops. They are more or less patent to every farmer. It is in carrying out these modern principles, which are so conducive to a nation's wealth, that has caused the advance in value of agricultural labour—the advance in the labour market. Nor is it an evil: on the contrary, it is one of the best of blessings. The modern farmer has only to adopt the best modern practice in all his management to be a contented partaker of this happy state of things. The truism is, that if he has more to pay, he must make more money from his farm to pay therewith. Nor need he hesitate. There are thousands of successful examples before him. Look at the profuse expenditure in artificial foods for stock and artificial aids for crops made by many of our intelligent farmers, and who get rich by the outlay. I could name several who consume their ton of cake per day, and the like, or nearly so, of artificial manures for their crops. My next neighbour has this year expended in manures alone (including fold-yard manure) upwards of £5 per acre for his mangold crop, and he has obtained one, which is now standing, of almost unequalled bulk. No one can limit a judicious expenditure in these aids. The parsimonious expenditure in such aids is far more to be deprecated than a profuse outlay. Well, all these matters combined, and being carried out with a laudable and business-like spirit, is the great cause of the rise in the labour market. In my own immediate district the wages of able-bodied labourers average 2s. 3d. per day of eleven hours, including one hour for dinner. The wages of the women average 1s. 3d. per day of nine hours, including one hour for dinner; and so much are they in demand that some of our farmers are compelled to give 1s. 4d. and 1½ pints of beer daily. Their employment is chiefly in "picking potatoes." We rejoice notwithstanding at this order of things. It is a proof that the potato crop is a good one and valuable, or this rate of wages would not be given. And what a bright prospect it gives for the coming winter! verily, there ought to "be no complaining in our streets." Moreover, we shall have a lower poor's-rate to pay. We earnestly wish that every district was in like pleasing circumstance. But says some one, "This is all very well for a particular district, but it does not materially touch the general question of labour." Well, take the county of Norfolk. Who has not read the account of the interesting meeting held at Norwich the other day, for the purpose of forming a Chamber of Agriculture for the county? The subject was there taken up; and the chief things uttered were lamentations as to the scarcity of labour—not of the price. The price was said to be ten shillings per week. Now, "it stands to common sense" that but few labourers will stay in a district for wages at ten shillings, when by migrating, by rail or otherwise, a comparatively short distance, they can obtain thirteen shillings and sixpence per week. Who can wonder at a scarcity? And who would regret it? Ten shillings per week, with bread and meat and potatoes *and beer* (save the mark) all at high and unusual prices! How do poor labourers' families subsist on such wages, and pay their way? The labouring population of England are fully entitled to good homely substantial food, in sufficient, but not wasteful, quantity. We are not of those who would contentedly supply them with "oatmeal-parritch," or "union-house skilly." No. They are entitled to, and are well worthy, a far better course of rations; and, what is better, they will and must have them. The time is gone by for "barley-bread," and "onion-gruel" too. The food of the agricultural labourer will henceforward be of a better and more substantial kind; and his wages will be proportionately high, according to the price of provisions, to enable him to get it. For this order of things, the agriculturists may lay their account. The fiat (if I may say so) is gone forth;

higher wages must be paid, or the best and most able-bodied will migrate elsewhere, and which they have every facility of doing. Nor need they do this on speculation. The demand for labour is almost unbounded in many districts and for many public works. The progress of the kingdom is illimitable; and the first motive-power is manual-labour in some form or other. This must be forthcoming in abundance, or many of the country's gigantic works proceed tardily, to the great loss of the projectors or promoters. Labour, therefore, they will have at some price; and hence the demand which opens out a way for the agricultural labourer to improve his circumstances, and which he is not slow to take up. But how is the farmer—the practical agriculturist—to fill up the gap, *i.e.* to procure a supply of labour consonant to his requirements? This is the question; and it cannot be readily or easily answered. There is no truly direct way, unless by open competition with the promoters of the gigantic works of the kingdom he outbids them in the labour market. This, in the present condition of agriculture, is out of the question: it would be ruinous. What is he, then, to do? His course must depend upon his judgment and means. No single idea or plan will suffice: it must be by a combination and condensation of all his plans and course of business. He must bring to his aid every economical appliance in implements and machinery likely to save labour. He must put in his crops so that horse-hoeing may supplant hand-hoeing. He must reap by machinery, thrash by machinery, cultivate by machinery, fulfil many minor departments of his business by machinery; in fact, all his arrangements and conduct of business must ultimately have especial reference to economising labour, or adapting it to the efficiency of the labour he can command, *i.e.*, the labourer, his wife, his children, &c.; for it will be found that much women and children's labour will be in demand in the labour market; and there are many minor employments, even in winter, that they can profitably accomplish—cleaning roots for the cutter, attending to the steaming of roots, aiding in the thrashing and dressing, &c., &c. In the summer, there is a great variety of labour in which they can efficiently be employed. The farmer must also bear in mind that railroads are making their way in every locality. He has no longer to travel his teams from ten to twenty miles to deliver his farm-produce, or fetch home his cake and artificial food and manures. These are wonderful acquisitions to him. All these matters will, as time rolls on, right themselves; but the farmer must be wide-awake, and fully up to the times, or he fails. P. F.

THE LABOURER'S COTTAGE AND EDUCATION.

At the Colyton ploughing match, Sir L. PALK said: I have been passing the last few weeks in the North of England, and although I have not been present at many large assemblies which have been addressed by Mr. Bright, Mr. Beales, and others, yet I did happen to pass through Manchester upon the day of the great meeting recently held there. I saw a great number of the operative classes from all parts of the country hastening to hear what was to be told them. Well, gentlemen, we have all read the speech made upon such occasions as that. You have perceived that Mr. Bright, Mr. Beales, and others have seen the world entirely through the medium of the Lancashire and Yorkshire operatives: in their eyes the men who work in the mills of those great counties are the symbol of England's prosperity—the means by which the country has attained her great wealth; and they forget altogether that vast, enlightened, and industrial class of the population, viz., the agriculturists of England. I am very happy to have this opportunity of seeing so many of that intelligent class here: I am glad to have this opportunity also of addressing them upon matters which are of some importance to the agricultural interest. Now it seems, by a careful analysis made by those who have the means of making it, that the average of the wages in England is as much as 26s. per week. We all know that this amount cannot be given in the agricultural districts; the earnings of those in the North of England employed in trade and manufacture must always be in great excess of the earnings of those engaged in agricultural and rural pursuits. Well, then, can you be surprised that from year to year complaints of all connected with agriculture are increasing on the score of the want of labourers to get in the harvest and till the land? And can you be surprised, when the wages of the North of England are so much in excess of those given in this part of the country, that a great proportion of your population is from year to year being drained from you—becoming alienated from you and no longer of use in the culture of the land? Now this is really a very serious question, and one which I wish to bring before you—the absolute necessity there is for the landed proprietors and agriculturists of this country to study how they may better, alleviate, and improve the lot of the agricultural labourers. What is it that will induce the farm labourers to remain on your land? First of all it is no doubt the wages that he earns, and next the knowledge of the occupation which he follows. But there is something still further that he requires—he requires a warm and comfortable habitation. That, I have no hesitation saying, it is the first duty of the landlord to provide. You will recollect that many years ago I had the honour of bringing this question before Parliament and succeeded in getting a Bill passed through the House of Commons, but I was not fortunate enough to get the Bill passed through the House of Lords—the effect of which was to enable the owners of entailed estates to charge their land for the improvement and building of cottages for the labourers upon their estates. The next thing you are bound to give the agricultural labourers is the same education that the manufacturing and artizan classes receive. You are all aware that the question of education is one that has been very much debated for many years past—first of all by Lord John Russell, and afterwards by Sir John Pakington, at whose instance a Royal Commission was appointed. The Commissioners deliberated and received evidence upon the subject for many years and upon their recommendation the minutes of Council were framed and the certificated pupil teachers were created. Well, that answered extremely well for populous districts, especially for manufacturing cities. Because where there were rich communities who had a large population, there existed the means of providing certificated masters, and they received the capitation grant and funds for the erection of schools. This pressed and presses now very heavily upon the rural and agricultural districts, for in many villages, especially in this county, the number of children in daily attendance probably will not average more than 80 to 90—which is a small number to pay for certificated masters. Therefore, because you are so poor, because you have not the means of providing yourselves with certificated masters, the law says you shall receive no support from Government, no assistance from the grant of Education, although one and all severally contribute towards it. That was a question brought forward last session of Parliament both by Mr. Walter, the member for Berkshire—a man of vast talent and great knowledge on this subject—and Sir John Pakington, and I ventured to address some remarks myself. At the instance of Sir John Pakington, a committee of the House of Commons was appointed, of which my right hon. friend was chairman. All who know anything of Sir John Pakington must be aware that there is no man more diligent, more earnest, and more determined to sift a question if he once takes it up. That committee, which has served now for two years, has taken the opinion of a great number of witnesses, and it has obtained the practical opinions of men deeply interested in the promotion of education amongst the labouring classes of the country. The other day Sir John Pakington addressing a meeting at Dudley of the United

Association of the Schoolmasters of South Staffordshire stated very much the same that I have just stated to you. He said he had for a long time taken up this question; that he had worked as hard as possible upon the committee; but owing to the great amount of matter they had obtained, and to the fact that the Government was changed in the middle of last session, they were not able to agree to that report which he had drawn up, and not able to make those suggestions which he had hoped they would have done. Therefore, the only result that this committee has produced is Sir John Pakington's own opinion, which I shall presently give you. Before this committee gentlemen of all opinions were invited to attend. Mr. Gover (the Rev. principal of the Saltley Training College) stated that the restrictions of the Council were most unwise, and one of the main causes of preventing the extension of education in England. Dr. Temple, another witness of great and just celebrity, was quite as strong on the other side. The Rev. Mr. Lee, of Droitwich, agreed with Mr. Gover's opinion, and Mr. Bellairs was vehement on the other side. So the testimony was contradictory, and difficult to obtain any result from. Sir John Pakington says: "On the whole your committee are too much impressed with the importance of ensuring a supply of good teachers, and maintaining the improved tone of our national schools, to allow them to recommend that the certificate condition shall be altogether given up, and results of examination be adopted as a sole test. But your committee are deeply impressed with the necessity of aiding neglected districts, and they think the views of those who advocate the abandonment of the certificate as a condition may well be met by some modification of existing rules, with the view of facilitating the employment of certificated teachers. Several suggestions have been made; one is that special inspectors might, on demand, either from managers or from local boards, visit particular schools desirous to come into the system of national grants, although not having certificated teachers; and that such schools should stand on the same footing as schools with certificated teachers. Another is that in schools having no certificated teacher the payment for results might be given, but the payment on attendance be withheld. These suggestions seem well worthy of consideration." This is no doubt a very nice question, but I venture to think that, so far as our own, viz., the agricultural interest is concerned, I can see a way out of it. If the system of having certificated masters is good in large and populous districts, by all means let us retain it; but we have proved and ascertained that the system is restrictive of education in the agricultural districts. Therefore I ask that, as far as the agricultural districts are concerned, those regulations may be relaxed. The expenses of the committee of education, the expenses of visiting officers, examining masters, certificated teachers, and others are very great; but it has been resolved that all the education that the State is bound to give is the elementary education of reading, writing, and arithmetic. Now we know that the position of the labouring population in the agricultural districts will not permit them to remain at school beyond a certain time, and if by our exertions we teach them reading, writing, and arithmetic, we give them the key of knowledge, the means of acquiring hereafter—if they are so disposed, or circumstances permit them—knowledge of a far higher character. Therefore I say I do not think it fair to the agricultural interest to say that they shall only be taught by this certificated master or that certificated master. I ask, as a right to the agricultural interest, that the education of their children should be paid for by results—that those who bring the children of their schools to the necessary efficiency in reading, writing, and arithemetic, shall receive a capitation grant, just the same as if they had been taught by certificated masters. The fact of the matter is that knowledge has been making such rapid strides, that even the agricultural interest have found it absolutely necessary to employ machinery to a far greater extent than they had hitherto done. It is of great importance to raise the agricultural labourer from the loutish state of ignorance he was once in, within my remembrance, and assimilate him more to the well-educated artisans. I am glad to have the opportunity of congratulating you upon escaping that terrible scourge, the cattle-plague, which has so awfully afflicted the North of England, and also the very bad harvest that they had in that part of the country. I suppose that for many years such a bad harvest has not been known in the North. In agricultural pursuits there is no distrust of each other; we are a united body, with one common employment—united to do the best we can for our labourers and tenants. And further, there is not that heart-burning, that jealousy and rivalry for wealth which in manufacturing districts seem to separate the artisan from those who employ him. I hope that will long continue, and I hope I shall again have the opportunity of thanking you for drinking my health as one of the members for the County of Devon.

Mr. **Kekewich**, the other member, said: I fully agree with Sir Lawrence Palk that our rural schools are not sufficiently provided for at present. Taxpayers in the country contribute no less than one million a year towards education, but there are very few rural schools that get any portion of it. I think that is a very hard case. A man in his time plays many parts, and you would hardly think that at one time I was an inspector of rural schools. I examined a a great number of schools in this county, and found them very badly supported. Perhaps a small subscription was doled out by some absent landlord, by some landlord who lived amongst them, but who could not subscribe much; but they were chiefly supported by—and I say it to their honour—the clergy, who were often very ill able to contribute the amount they did. Therefore I say it is hard that these schools receive no part of the Government grant. I have always, during the time I have been in Parliament, voted for every proposition which would give a small grant—however small it might be—towards the support of these small rural schools.

AMATEUR FARMING.

At the Bakewell Farmers' Club dinner, Mr. Jackson, one of the members for North Derbyshire, said: He had always maintained that unless the land was prosperous, there was no prosperity for the mining, manufacturing, or commercial interests. A strong feeling in favour of the land was born in every Englishman. If a workman can only get a snug cottage, with a bit of garden attached to it, he will never leave it unless he is compelled; and if a man makes a bit of money, the first thing he does is to build a house, and get a piece of garden ground. Then if he succeeds in making a little more money, he will turn agriculturist, and endeavour to beat his neighbours in breeding cows and other farm animals. That was the case with himself. In 1842 he left off commercial pursuits, having been told that if he wished to live he must cease from the anxieties of business; so he bought an estate and turned farmer. A portion of the land which he purchased had ruined two farmers, who had been tenants of it just before he became the purchaser. He bought the land at 12s. 6d. an acre, and after three years, having spent £20 an acre in improving it, he let the land at £1 17s. 6d. an acre on a seven years' lease. Now, his commercial knowledge and his capital were brought to bear on the land, and the return was beneficial to the land, beneficial to himself, and beneficial to the neighbourhood. When he first commenced farming, he was considered an innovator and an encroacher upon other men's privileges, and he was laughed and sneered at; but when he produced 40 tons of carrots to the acre; when he gathered 42 tons of swedes an acre; and when he reaped 56 bushels of wheat an acre, he was laughed and sneered at no longer, but was asked to become chairman of an agricultural association. He had sold some rams at £15 apiece, and bullocks at 50 guineas. After he had been farming about three years, his bailiff came to him and said: "Mr. Jackson, we have got the foot-rot in the sheep." His reply was, "Well, I shall rot too if I go on farming much longer." As long as there was any excitement in farming—in draining, in rebuilding, in pulling down old hedges and making new ones, he liked it exceedingly well; but when he found that wheat did not grow in a few hours, and that he had to be patient for several weeks together, he found it uncommonly slow work, so he gave up farming on a grand scale, and put the bit in his mouth once more as a mercantile man. True, he was a farmer still, but then it was in a small way.

THE ADVANTAGES OF EARLY PLOUGHING.

At the monthly meeting of the Ballymahon Farmers' Club, on Monday, Oct. 1st, Mr. JOHN LUNEN, land steward, read the following paper:—

This subject is of great importance to the farmer, when he sees the immense gain it is to himself, and to all the classes who are depending upon good farming. We might (as we have had but little time for the preparation of this paper) do what we have heard of a reverend gentleman say he would do with his text—1st, says he, I will discourse about it; 2nd, I will discourse above it; 3rd, I will go below it; 4th, I will go away from it; 5th, I will come right up to it; and lastly, I will go right through it. Now, without following the example of this gentleman, I will at once try to go right into my subject. The common practice of the ordinary farmers of the country is to plough late—to plough when they should be sowing; and if you ask them why they don't cultivate earlier, you get the answer that if the land were turned up it would be "too cowld" for the seed. These men do not see the pernicious consequences, else they would surely change their practice. It is well for all tillers of the soil to have a wholesome conservatism of all good customs and habits which are really beneficial—a conservatism of such theories, whether they may be traditional or otherwise, which, when reduced to practice, work well, so as to put money into the pocket. But whilst it is well to be conservative of everything that is good, farmers ought at the same time to be thoroughly radical, changing everything which improved farming says ought to be changed, and laying the axe to the root of every custom which is condemned by the improvements of agriculture. It is high time for men to lay aside their exploded theories, that will not stand the test of reason and of science, and adopt the improvements of the age. Every science is advancing, and men are availing themselves of all the advantages of the age. Why not in farming take advantage of all the recent improvements which have been found to work so well. Late ploughing produces bad crops of every kind, unless they are forced by the strength of the land. It pauperizes the tenant, or has a tendency to do so; therefore we say it ought to be given up at once, and the early ploughing adopted with all its advantages, which we will try to point out.

> "Wherefore come on, O young husbandman,
> Learn the culture proper to its kind."

Before pointing out some of the advantages of early ploughing, it may not be out of place to notice the sort of ploughing we approve of. All soils should not be ploughed equally deep; and whilst we are strong advocates for deep ploughing generally, yet we say that it ought to be according to the nature of the subsoil. If there be a good subsoil on such lands as strong clays, loams, rich gravels, or deep sands, the ploughing ought to be as deep as possible, so that a considerable quantity of it may be brought up in the rotation at green cropping; but if the subsoil is bad, as on thin clays and barren sands, we would let it remain, and not bring much to the surface.

The autumn after the crops have been saved is the proper time to plough. The land then is generally dry, and cultivators cannot be too particular in getting a dry tillage. Ploughing the land wet is most injurious to the succeeding crop, and encourages the growth of weeds. The soil when wet consolidates; and instead of having the pores thoroughly opened for the reception of the gases of both atmosphere and the rain, they are closed. The ancient Romans, who excelled in agriculture, were exceedingly particular in having their land ploughed dry; and just in proportion as we advance in agricultural science, and approximate to these sage people, so will we be attentive to the state of the land in ploughing. It is the good ploughing at the right time—other things being equal—that ensures the good crop. Pliny, the celebrated Roman writer, assigns good ploughing as the cause of the corn being so plenty in Rome in ancient times. "What," says he, "was the cause of this fruitfulness? Was it because in those times the lands were cultivated by the hands even of generals—the earth, as it is natural to suppose, delighting to be ploughed with a share adorned with laurels, and by a ploughman who had been honoured with triumphs? Or was it because these men ploughed their fields with the same diligence that they pitched their camps; and secured their corn with the same care that they formed their armies for battle?"

No matter how well ploughing is done with skilful hands and good horses; no matter how straight and well-shouldered the furrows; no matter that the plough is according to the most approved plan; yet, if the land is wet the whole is bad work, as it will not pay. In farming, as in everything else, we should ask the question, Will it pay? and endeavour by our practice to answer in the affirmative; but wet ploughing we say emphatically will not pay. Early ploughing most generally ensures the land to be dry, and therefore the advantage. We have seen many a field of rich earth lost to the occupier in consequence of wet ploughing; poverty comes to him as an armed man, but the cause is patent that all his work is done in the same style. But autumn ploughing banishes weeds, which is another great advantage to the farmer. The greatest foes to agriculture are weeds. They not only choke the crop, but they absorb the nutriment designed for its production, and no matter what species of crop it may be, its greatest foe is that which grows beside it as weeds. In all our cultivation we should aim at the destruction of weeds, and whatever tends to their extirpation is good husbandry. As we said before, farmers ought to be radicals as well as conservatives, and tear up by the root everything that mars the growth of the crop. We have seen the farmer who considered himself perfection let all the weeds grow in his oats until the harvest, and then separate them. The weeds had not only exhausted the soil more than the crop, but they had sown their multitudinous seeds, to produce a hundredfold the following season. Autumn ploughing turns up the roots of the weeds to be exposed to the frost, rains, and thaws of winter, and thus to perish them. And although it is very difficult to banish them, so much so that a good Scotchman, who was a better man than a farmer, once said, "Sin and the Deil ye may overcome, but weeds ye canna." We affirm, however, that the best antidote against these enemies of the husbandman is autumn ploughing. Fields filled with root weeds, many of which we see in the country, must be in a state of greater exhaustion than if they produced a heavy crop of oats. The productive quality of the earth must, of necessity, decrease in proportion to the quantity of the weeds grown; and early dry ploughing is one of the best methods I know, except fallowing, for expelling these unproductive plants, and preparing the land for the reception of beneficial ones. It is a pity to see so many crops destroyed by these enemies of agriculture, and to know that they are leaving the occupant of the soil penniless. Therefore we would entreat farmers to study their own benefit and cultivate early. I can give the experience of sixty years, twenty of my own and forty of my fathers, and, without an exception, we never found the autumn ploughing to fail in the desired results. Another advantage accruing to the tenant from early culture is bringing the land to the proper tilth. The experienced agriculturist in spring knows the good of having the land in such a state that it can be properly pulverized. The exposure of the clay to the winter frosts and rains reduces it to such a consistency that you may easily prepare it for the most delicate crop. We have seen many farmers in the spring, when dry weather sets in, turning a strong force to the fields to break the clods, that neither harrow nor roller would break; whereas if the same land had been early tilled, the frosts and atmosphere, with the heavy rains, would have been the best clod-breakers, and have done the work effectually. We have read of the fable of the Lemon and Soda. "I could soon destroy you," says the Lemon to the Soda. "I could soon take the juice out of you," says the Soda. "Let us have at it," says the Lemon. Fiz, fiz, goes the Lemon, and Fiz, fiz, goes the Soda; and the result is, nothing is left behind but, apparently, a little dirty, soft material. So with the frosts and rain; fiz, fiz, goes the frost and the rain, and so carry on their battle upon the newly upturned earth, and the result is proper pulverization. How could the land be brought to such a state were it not early ploughed? It would be impossible for the hand of man to leave it in as good a tilth as the elements; and, therefore, if we are wise for ourselves, wise for those whom we are necessarily training by our example, and wise for the dependants upon good farming, we will adopt the system of early culture.

No matter what the crop may be which you are to sow in the following spring, the great advantage is to have the land brought to a good tilth for it; and therefore you are not afraid of it, as far as human precaution goes, being a failure. Plough early; and money will be saved in the otherwise expensive preparation of the land, and a conscientious satisfaction will cheer you amidst the gloom of your neighbours, that, if Heaven has designed a bad crop, it will not be for the punishment of your neglect. Another advantage is, that the land is ready for the early seed. I have often grieved, for their own sake, to see farmers send out the plough to make a beginning of their work at the very time they should be sowing, as seed-time is promised; but many farmers are not ready to avail themselves of it when it comes, and you hear nothing but the wail of complaints, and see their frowning countenances falling at the weather, whereas it is themselves they ought to blame. But to fault oneself is not a common or a pleasant practice. The laws of Nature work most orderly and harmoniously; and when men come into collision with them they are sure to be injured. The farmer should see that he does not come into collision with these laws, else misery and loss will be the consequence. We have seen such men, by not being ready to do their work in the seed-time, lose much of their crop. In a well-regulated farm, all the work is done in the proper time and place; and as we know there is a time for everything, so should everything be done in its time. It is an old proverb, and a true one, that "the early bird catches the early worm;" and the early ploughing enables the farmer to catch the proper season for everything. You will always know, when there is late ploughing, late sowing, and late crops, that the farmer is both lazy and indolent. Correct farming, in its details, is like a chain, one link depending upon another, thus making a beautiful whole. If ploughing, for example, is done in February and March, when the seed should be sown; if potatoes are sown in the month of May, and an early disease comes on, they are not worth taking out of the soil; if turnips be sown in July, thinned and weeded about harvest; if the turf-cutting occupies the month of June, or a part of July, when they should be ready to be drawn home; if there is not time, from a collision of things, to embrace the early good weather for hay-making, the result will be calamitous. Ploughing takes the place of sowing; potato-planting takes the place of turnips; turf-cutting takes the place of hay-making and turnip-hoeing; and hay-making takes the place of harvest, the oats being often left so long uncut that the straw is scarcely worth reaping, and the crop materially injured. Whence arises this collision of things? We answer, from late ploughing. Let there be autumn-ploughing; and the farmer, beginning at the proper place, will be able to do all things early, and will also be in a position to avail himself of good weather, when it comes, for the saving of his hay and grain crops. In a machine, one break may cause many in the complicated machinery; so in farming. One break from the proper order may make many, and thus cause complete confusion during the entire season, with heavy loss. But a machine must be so nicely constructed that there will be little friction: if there be much friction, arising from a bad mathematical adjustment, it will lead to the breaking down of the whole machinery. So we say all things ought to be done in farming so that there will be as little friction of one work pressing upon another as possible, lest disorganization be the result. Early ploughing will be the first and most important step in the year's farming—will obviate and prevent all the confusion and loss to which we have referred: hence its advantage. Another most important advantage arising from it is the amount of manure received from the ammonia of the atmosphere and the rain. It is a well-known fact that the plants which the farmer cultivates receive their nutriment from three sources—the soil, the atmosphere, and the rain. The opinion that the atmosphere contained only the two gases, oxigen and nitrogen, is superseded, and agricultural chemists have found that it contains a slight portion of ammonia and carbonic acid. The ammonia, containing nitrogen and hydrogen, is of the greatest importance, and may be regarded as pre-eminently required for the nourishment of plants. The early ploughing leaves the land in a fit state to freely imbibe the gases of the atmosphere; and as ammonia readily dissolves in water, the rain dissolves this gas, and the soil retains it for the nutriment of the following crop. Liebig, the celebrated chemist, made an experiment upon rain-water, and found it to contain a small portion of ammonia; and he estimated that, if one pound of rain-water contained one-fourth of a grain of ammonia, a field of 26,910 square feet would receive annually upwards of 80lbs. of this gas, so that a statute acre would each year receive in the rain that falls upon its surface about 129lbs. of ammonia. When such has been proved by this eminent chemist to be the probable amount of this pre-eminently nutritious element imparted to an acre-surface from rain-water, is it not of the greatest importance that land designed for cropping should be as early as possible turned up, that it may easily imbibe and retain that which is to be the great support and life of the future plant? The Supreme Being has made a provision in the atmosphere for manuring our fields; and thus, in the silent night as well as the busy day, it is carrying on its fertilising influence. But many prevent it from doing this work to a greater advantage, by their late ploughing. Who that has ever fallowed his land has not found the immense advantage to it? and what has produced that change from comparative barrenness to great fertility? Does it arise from the frequent ploughing, or the destruction of the weeds? Partly, but chiefly from being turned up the whole year, to receive the ammonia of the atmosphere. Therefore the advantage of early ploughing, which admits of early cross-ploughing, so that the soil may catch the greatest amount of this most beneficial gas. The system of early tillage ensures a greater return from the crops, whether they may be oats, barley, flax, potatoes, turnips, or any other green crop. This has been the experience of the best farmers, and will be the experience of all who try the experiment.

Much praise is due to the excellent editor of the *Irish Farmers' Gazette* for the manner in which he has laboured to change the habits and customs of Irish farmers; and although many have read, and do read, that periodical, yet they continue their old practice. When you reason with some men upon this subject, they will tell you, more honestly than politely, that they know better than either you or the editor of the *Irish Farmers' Gazette*. They are proof against all teaching and all improvements; and when you endeavour to benefit them by trying to make a change, they will tell you, as a reward for your trouble, that "it's all nonsense," even before they have tried the experiment. Truly, as regards such men, one is inclined to say, "As it was in the beginning, is now, and ever shall be, live without change, Amen." I have often wondered why men will so tenaciously cling to what is ruinous to them, and reject the experience of those who wish to benefit them. Is it early training or prejudice that keeps them from adopting necessary improvements? I can only account for it in the way that one nigger accounted to another for a fish that could not be taken by his bait. A poor black man once sat down at the side of a stream to take some refreshment, which consisted of bread and whiskey. Some crumbs of the bread fell into the water, and the fish took them up. The man dipped the bread into the whiskey, and let it fall into the water: in a short time the fish were all floating lifeless, as it were, on the stream, and the blackie caught them easily. But there was one large fish that he could not influence, although it took the crumbs of the bread as freely as the others. Being determined to catch it, he went to a friend and borrowed a net, and having succeeded in his object, he showed it to his friend, who replied by saying, "Sambo, I unarstand dat fish; dat fish is de mullet-head; dat fish has no brains;" and, therefore, as whiskey influences the brain, the fish was not caught. We are afraid that many who are proof against all improvements are like Sambo's mullet-head. However, the plan is to work away until society has been leavened by wholesome improvements, and the farmers led to be benefited by scientific changes as produced in agriculture. Larger and earlier crops will be the result of early ploughing; the good harvest, when early, will be embraced, and the different works on the farm not retarded. If the farmers of the country want good green crops, if they want large returns of oats and other such crops, if they want to be comfortable upon their farms, then let them take the first step to such comforts, and to the obtaining of such crops—namely, plough early. Much has been said and written upon the proper management of the turnip crop, and many have endeavoured to find an antidote to the destructive little animal that eats up the turnip, known as the turnip-fly. We give a preventative which during the course of a long experience, both of my father and myself, we never found to fail—plough early; and in so doing the land will be in such a state by the fertilising influences of the atmosphere, and the pulverizing power of the frosts and thaws of winter, that it can be reduced to the finest state of tillage, which is the safest and best antidote against the ravages of this insect. The land intended for turnips cannot be too well tilled, and the precursor to that is early ploughing. It lies at the foundation of the farmer's success, as we have shown of green crops, which, when largely and carefully grown on the farm, makes the healthful young stock. Better not rear young stock if they are not properly fed and cared. On the farm where green crops are not produced, unless there be very rich pasture, you will see poor, and consequently unremunerative stock.

A number of very excellent papers have been read since the beginning of this club, but the success as the first step in carrying out their recommendations and arriving at some degree of excellence depends upon early ploughing. As we have endeavoured to show, it is the origin of the good green crop, which was the subject of the society's first paper, and whatever makes green crops plentiful affords much feeding to all of the farming stock; it is the best preventive to the destruction of the turnip-fly, the true friend to agriculture, the extirpator of its enemies the weeds; it is the remote and secondary cause of the luxuriant flax-crop, the guarantee of other things favourable—of the fields waving with early and yellow grain; it enables the tenant to pay his rent, and fills the landlord's pockets at May and November with his just due; it imparts happiness to the farmer looking at his summer and autumn crops. Our minds are so constituted that much of our happiness arises from our senses, especially from the sense of sight; and on looking at good clean crops of every kind, there cannot but be awakened in our minds, from beholding such, the sensation of pleasure. As the sight of something unpleasant produces the sensation of pain, so must the sight of bad weedy crops produce unpleasant sensations both in the min of the traveller and the good agriculturist. We might, ha not this paper exceeded the proper bounds, have contrast the advantages of autumn ploughing with the disadvantag of late ploughing; but we will leave the farmer to do that f himself, and we would strongly recommend those who are fo of late tillage to a little mental exercise upon such a contra and they will surely be convinced of the loss sustained by l ploughing. It is a trite poetic proverb that—

> "Early to bed, and early to rise,
> Makes a man healthy, wealthy, and wise;"

which might be applied with all its force to early plough Finally, we say, in the words of the poet, in his agricultu stanza—

> Early to plough is early to reap,
> Makes the land fertile, and the oats cheap;
> Destroys the bad weeds, and the turnip-fly kills;
> Produces large green crops, and the granary fills;
> Causes the stall-feds to moan and to sigh,
> Because their big bellies are raised far too high;
> Brings the fine young stock to leap and to jump,
> As by much good feeding they are fat at the rump;
> Strengthens the ewe in her delicate state
> With turnips as good as ever were ate.
> The ducks, hens, and geese are all brought together,
> To eat up the oats that were saved in good weather.
> The farmer looks on, and is happy to see
> That all in the yard are in such a high glee;
> He thinks of the rent, that has come by less trouble,
> And says, 'Early ploughing has made me reap double.'"

THE IRISH LAND QUESTION.

Mr. J. LOWRY WHITTLE read, at the meeting of the Social Science Congress, a paper, of which the following is an abstract: Speaking of the present condition of the land question in Ireland, he said the question had begun to attract attention as early as 1835; and, though so many changes had occurred since then in the circumstances of the country, this question was still one requiring legislative settlement. The condition of Ireland when the question first arose was very different from its present condition. The country then suffered from evils which were the direct result of the old system of leasing, viz., an excessive population, minute subdivision of holdings, and very inferior husbandry. Another great evil was the embarrassed condition of the landlords. The last evil had, however, been remedied by the Incumbered Estates Act. Emigration had drained off a large portion of the superabundant population. A great extent of country has been restored to pasture, which had been the chief mode of employing the land up to the middle of the last century. Tenants at will had been substituted for the old leaseholders. But the old habit of the landlord leaving the tenant to make the improvements continued, and to a great extent continues still. The smallness of the holding made it impossible for the landlord to make the improvements in a demonstrative way. If the tenant continued to occupy, all went well; but, if he was evicted before the improvements were exhausted, he had no means of obtaining compensation from his landlord. This state of things discouraged improvements. The principle of compensation was recognised by Mr. Cardwell's Act in 1860; but the machinery was too expensive, and the compensation allowed too small. Four bills were introduced last session. Three of them proposed to remedy the evil by encouraging leases. The fourth, that of the late Government, proposed to give all tenants at will a lump sum if they were evicted within 31 years after the making of the improvements. The bill did not require the consent of the landlord, nor even any notice to him. Such a bill would have directly encouraged eviction. All recent evidence on the state of Ireland proves that the country has been slowly and steadily increasing in wealth since 1852. It further appears that the landlords are in many places adopting the E plan of making the improvements themselves. Any mea that would give security to an improving tenant, without e tailing the rights of property, would be very beneficial, and altered circumstances of the country would give such a m sure a good chance of success.

Extract from a paper read on Tuesday, the 9th Oct., RICHARD W. GAMBLE, Esq., Barrister-at-law, on "Comp sation to Tenants in Ireland:" After some preliminary marks, Mr. Gamble said: Improvements should be div into three classes, to be dealt with and provided for ferently. Improvements of the first class, which are in nature of good husbandry, will be found far more portant to the present state of Ireland than any oth No direct legislation has been hitherto proposed, ex in the bill of Lord Derby's Government in 1852. proposing compensation to tenants for improvement of th farms under this first class—that is by means of high cul tion, high manuring, and for grass-seeds sown—we do not p pose any new mode of legislation in this matter, but only adaptation of the old principles of legislation to the new altered rights of the landlord and tenant respectively, ar out of the discoveries and improvements in the mode of tivating land—the old principle that "he who sowed sh reap." There are, in all, 559,180 tenants in Ireland ho over one acre of land each, and of these there are no f than 401,136, or 70 per cent., whose holdings are between acre and thirty acres statute. I propose to induce the ten themselves to change their system of agriculture, and c out improvements of the first class—to invest their labour capital in bringing the land to a high state of cultivation. they do make such investment, it is entirely in accordance w the principles of the law and custom of England that th should be entitled to reap somewhat of the things which th have thus sown, as the English tenants are now entitled to under the custom of away-going crop. The question th arises with regard to the 15½ million acres of arable a pasture-land, and one-half million acres of reclaimable wa in Ireland, what is the mode of improvement to be applied? There are no statistics by which to ascertain how much of them would be improved by drainage. Perhaps a very full allowance would be one-eighth, or 2,000,000 acres; whereas at least one-half, or 8,000,000, are capable of a vastly improved mode of cultivation, and could thereby be rendered nearly doubly as productive as at present. The quantity of land in 1863 held in farms of over one and under 30 statute acres each was 7,134,299 acres, and the quantity held in farms above 30 and under 50 acres each was 2,176,936 acres. From these two classes alone it will be admitted that it would be easy to find nearly 8,000,000 acres requiring improved cultivation. Here, then, is really the field for the legislator, the political economist, and the philanthropist to discover and apply the means of stimulating the industry and enterprize, and calling forth the energy and the capital of the landlords and tenants of these eight millions of acres, that all might be applied in improving the mode of their cultivation, so as to increase their productive powers, and scatter plenty through a smiling land. Drainage and improved cultivation, then, are the means to be adopted; the former as applied to two millions of acres, the latter to eight millions of acres. As to drainage, let us inquire first how far it is possible or necessary to effect anything by means of legislation. With regard to land improvable by drainage upon the holdings under 30, or perhaps under 50 acres, legislation can effect but little. The entire number of occupiers of land holding over an acre, whether as proprietors or tenants, is 551,180; and of these the number of tenants holding over one acre, or under 30 acres, was 401,136, and the number holding between 30 acres and 50 acres was 72,050, making together 473,186, nearly 85 per cent. of the entire occupiers, whether proprietors or tenants. It is plain, therefore, that any plan of improvement which is not applicable to, and capable of being taken advantage of, by these 473,186 tenants, will be almost useless, and that any plan which deals only with the building, drainage, and irrigation, is beyond their reach. Nine-tenths of these 473,186 farms are in the most wretched state of cultivation, not producing more than one-half what they ought to produce. The remedy which I propose is to give the Irish tenant, by law, the same right to away-going crop to which the English tenant is entitled by custom—a custom which not only includes a share of the growing crop, but compensation for everything which he has done on the land within three years in the way of cultivation, and for which he has not been recouped. Small as this matter may appear to be, its influence on the present state of Ireland would be much more powerful than that which would hold out greater hopes, and promise much more largely, with regard to improvements which are beyond the reach of the great bulk of the small farmers. The second class of improvements consists of drainage, irrigation, subsoiling, and reclaiming waste. They are of an expensive nature, and the tenant should not be considered to have been repaid his outlay by retaining possession, nor the value of the improvements to have been exhausted before, say, at least fourteen years. In order to be effective, they should all, except the subsoiling, be done upon a previously settled plan, consistent not only with the requirements of the particular farm, but of the entire estate; therefore, if the tenant requires them done, the landlord or agent should be consulted as to the mode of doing them, and should have the option of carrying them out himself and charging the tenant an annual sum for the outlay; but no premium should be held out to the landlord to take the work out of the hand of the tenant if he is willing to do it. The probable cost should be estimated beforehand, so as to ascertain whether the work would be remunerative; and the condition and value of the land improved, and the nature and extent of the work to be done should be ascertained, so as to lay the foundation for a future valuation. Notice of the intended improvement should be given to the landlord, for otherwise he would have no means at the end, perhaps, of thirteen years, of ascertaining whether the works had been really done. One right should, perhaps, be reserved to the landlord, viz., if there be no lease, to resume possession within twelve months, and that no improvements of this class should be done against the landlord's wish within the twelve months. Within that time the tenant will decide whether he will continue to hold the land which he is not allowed to improve; and the landlord will decide whether he will yield to the tenant's views or insist upon possession; and there would be little doubt that the difference would in the meantime be settled by mutual agreement. As to the third class of improvements, namely, building, embankments, farm-roads, and fences, they differ from each of the other classes in a most material manner. They do not increase the productive power of the soil, and may be of no use whatever to landlord or succeeding tenant. No improvements of this class should be allowed without the consent of the landlord. I believe no greater boon could be conferred on Ireland at this moment than a termination of the agitation upon this question.

Dr. **PARKHURST** said the subject was involved in historical considerations, and in the tenure of land. People in England had made one great and fundamental mistake in viewing this Irish question, by applying to the relation of landlord and tenant in Ireland the same rule, principles, and maxims which governed that relation in England, whereas there really existed an essential difference between the two cases. The Irish tenant had always had a greater and more permanent interest in the soil which he cultivated than the English tenant, the consequence having been that he had applied his industry and capital more systematically to the improvement of the land; and there ought to be no real objection to the Irish tenant being recouped to the extent of his industry and outlay. He considered that the tenant had a right to expect this, and that then it became a mere matter of arrangement as to whether the tenant should receive a compensation in the shape of an extended lease or in the shape of money payment. He approved of the great experiment that had been carried out in Ireland by the adoption of the Incumbered Estates Act, and said we ought to thank Ireland very much for it, if only upon the ground of the great influence it had had in the introduction of the colonial system of the registration of estates.

Mr. F. **HILL** said that he considered the question was of deep importance. It would be a wise action of the law to have the matter settled once for all; and he recommended a solution of the question that where the landlord and tenant made a bargain or covenant between themselves, that bargain should be carried out; but in the absence of any such bargain, the equitable principle should be carried out, by which the tenant, on giving up possession of a farm, should be compelled to pay compensation for any deterioration of value which the farm had sustained, while, on the other hand, he should receive compensation from the landlord for any augmentation of value which he had occasioned.

Dr. **HANCOCK** supported the view of Mr. Hill. He said the principle involved in that view was one of universal application, and it was one by which the tenant would be likely to introduce a higher class of improvements, and improvements of a more extensive character upon the estate which he farmed.

The **CHAIRMAN**, in a few words, closed the discussion. The question, he said, was deeply important, and there was a strong feeling that there should be special legislation upon it. He touched upon several of the details which would have to form part of any amendment of the existing law, and concluded by expressing a hope that some legal solution of the question would be speedily arrived at.

THE BAKEWELL SHEEP.

Of all the various breeds of sheep,
That butchers kill or graziers keep,
From which do we most comfort reap?
The Bakewell.

What sheep produce the richest meat,
And in appearance look most neat,
And pay best for the food they eat?
The Bakewell.

Which most of all the landscape grace,
Contain most bulk in smallest space,
And when they feed adorn the place?
The Bakewell.

Which best our craving wants supply,
To feed and keep us warm and dry;
And make both cold and hunger fly?
The Bakewell.

Which are most tractable and tame,
And will so long as sheep remain,
Immortalize great Bakewell's name?
The Bakewell.

American Farmer, Baltimore.

THE MANAGEMENT OF FENCES.

At the quarterly meeting of the Wenlock Farmers' Club, Mr. **Keary** read the following paper on the Planting, Rearing, and Management of Fences:—Gentlemen, Before I enter upon the consideration of the planting, rearing, and management of fences in the order laid by your Society, it may not, I think, be unprofitable to notice generally the state of fences as they exist at present in this country. It is universally (and with great truth) admitted that the agriculture of Great Britain has been developed and extended in an extraordinary degree during the last 25 years. Our cereal crops are increased in quantity and quality, and roots are grown with success on land hitherto deemed incapable of producing anything but wheat and beans. Barren wastes have been successfully and profitably enclosed, and the steam plough and the reaping machine are implements with which we are daily becoming more familiar. In addition to all this, the energy which has been shown, and the success which has been attained, in the breeding and rearing of live-stock during the above period, proves incontestably that the British farmer has not been asleep, and that he has, to some extent at least, kept pace with the industrious enterprise of his commercial neighbours. There is, however, I regret to say, a dark side to this picture. Great as have been the advances made in agriculture generally, I do not hesitate to express the opinion that our fences as a general rule throughout England and more particularly throughout the west midland counties, are in a most discreditable and neglected condition. In the first place I contend that nearly three-fourths of the existing fences upon arable land ought to be swept away altogether. For all practical purposes they are utterly useless; large, irregular, and overgrown, consuming on many farms nearly a tenth of the land, and growing moreover weeds of all sorts in the greatest abundance, they are productive of great annual loss and a continual source of expense. And what good reason can be given for their continuance? They grow no corn, they produce no live-stock. Our forefathers probably planted them for shelter, and cut the ditches which frequently run parallel to them as the best method of drainage with which they were acquainted. But those days are gone; drainage and other causes have ameliorated our climate, and I am convinced that the demolition of a large proportion of our ancient hedgerows, however much such a plan might detract from the beauty of the landscape, would tend immensely to facilitate and cheapen our agricultural operations. The evils indeed of the present state of our fences must be so apparent to any reflecting mind, that it can hardly be necessary for me to do more than enumerate them very briefly. Fences are injurious—1. Because they absorb a large quantity of valuable land, which, but for them, could be brought into cultivation, and thus add largely to the resources of every farm. 2. Because they encourage the growth of all sorts of weeds, which, in too many cases, are allowed to mature their seeds, and disperse it in high winds all over the country. 3. Because they prevent a free circulation of air over our fields, and frequently cause mildew, blight, and rust. 4. Because they seriously increase the amount both of horse and manual labour, as, for instance, in the frequent turnings they occasion to the ploughman, and in the time expended in cultivating head lands, frequently difficult of access. Still further proof might easily be brought forward; but I think I have stated enough to prove that the present system of hedges in England is radically wrong. Why then are they so long maintained in their entirety to the injury of the tenant and to the loss of the community at large. The fact is that the administration of the affairs of our landed property is somewhat conservative, and because the hedgerows were planted by our ancestors, they are treated with profound respect and allowed to remain. I will consider shortly whether they may not be easily dispensed with. In one of the best cultivated and most productive parts of the county of Kent, and in several other couties also, fences are almost unknown. The fields are divided into a regular rotation of crops, and when turnips or clover have to be eaten off by sheep, the simple expedient of hurdles or nets confine the animals within the proper limits. No inconvenience is experienced, and, as I believe, great evils are avoided. I do not, however, advocate the entire abolition of our fences in this district; but miles of them might at once be grubbed up with great advantage, and the sizes of all the fields might be very much enlarged. Good strong, but not high fences, in our pasture fields are highly necessary and desirable, and I will endeavour to show how they may be maintained within proper and reasonable limits.

The preparation of the soil before planting is a most important process, but one too generally entirely neglected in connection with hedge fencing. Wherever it is decided to plant a new fence, the greatest pains and care should be taken thoroughly to clean from couch and all weeds the seat of it. If this preliminary point is not carefully attended to, not only will the future growth of the young quick be seriously impeded, but great expense in weeding will be entailed. The construction of the bed where the plants are placed is also of importance, and must be regulated by the nature of the soil and local circumstances. If the soil is light and poor, and not deep in staple, I strongly advocate a low bank, formed as follows: Allow four feet and a-half for the seat of the bank, and throw upon it as much of the top spit or surface soil on each side as will raise the bank about 2 feet high. Upon this table the quick sets should be laid in, with the roots downwards, and 5 inches apart. Then place carefully over the plants 12 inches more soil, and gradually narrow in the bank until the top is finished about 9 inches wide. The accompanying sketch will explain better than any description I can give, the form and size of the quick table. It is a good plan, although not absolutely necessary, to prick in a small dead hedge on the top of the bank; it protects the young shoots from the cold winds of winter, and prevents injury from hares and rabbits to some extent. If some good short muck could be afforded it should be spread upon the ground before the bank is raised, at the rate of about twenty loads per acre, and it then becomes thoroughly incorporated with the soil. It is a bad plan to lay the quick in the muck, as it is apt to cause mildew the first year, which is very injurious. On good old pastures the turf should be thoroughly well chopped and placed in the middle of the bank; the young quick will feed well on it, and manure is not so much required. There can be no doubt that the manure is of great advantage by giving the young quick a good and rapid growth at first. It is not always practicable to place a new fence so as to give the plants the best aspect, but where a choice can be exercised I think a west aspect is preferable, as the young quick does not then get the north wind at the back or the east wind at the face. The best time for planting is the middle of autumn, after the fall of the leaf, or in the month of February. The age of the plants (white thorn of course) should be two years transplanted, and the oftener they have been transplanted in the nursery the better will be their roots. It is highly desirable to plant quicks with clean fibrous roots, and not old long and cankered ones, and although the cost of selected plants is somewhat greater in the first instance, it is cheapest in the end, and a good strong fence is much more quickly obtained. The advantage of the early spring planting is that the January frosts are avoided, and the bank has time to settle before the drying winds of March set in. The tops should be cut off to within two inches of the ground-mark; for, although some nurserymen advise that the plants should be set as they come from the lines, I cannot see the advantage of it; and my own experience of many years is decidedly in favour of cutting off before planting. I think the gales of winter have a great effect on the long shoots of the uncut plants, and very seriously loosen their hold in the ground before they become well-rooted; and I am also of opinion that the young shoots are more vigorously sent forth in spring, when the tops are taken off at the time of planting. In strong and unkind soils, I advocate the same form of bank, with the addition of a ditch on one side, to carry off the water. On good deep loams the bank may be dispensed with; but great care must then be taken to open the tsench with a spade sufficiently large to hold all the roots without crowding. The plan of planting with the dibble is highly objectionable, and should never be resorted to, as the roots are then crushed into too small a compass, and many of them are bruised and injured by the careless way in which they are frequently thrust into the ground. I once seriously injured several miles of fencing by allowing the dibble to be used, and so learned a lesson which I have never forgotten. The operation of planting being finished by the end of November or middle of February, as the case may be, nothing further is required, unless it is necessary that the fences should be guarded by posts and rails on one or both sides. In arable districts the guard-fence is quite unnecessary: hurdles or nets can be employed to keep off sheep, when the land is under roots or clover. When, however, the fence is to be raised on pasture-lands, posts and rails must be used to protect it. If larch is grown in the district, the thinnings of the plantations provide admirable fencing materials, the lower or butt-ends being used for posts, either whole or split, according to their size, and the tops serving for rails. Nothing less than four rails will keep out lambs; and it is perhaps better to give the additional rail in the first instance. I have, however, raised many miles of fences with only three rails, interweaving the two lower ones with thorns or trouse; and, by taking care to replace it when it becomes rotten, a very sufficient fence can be made against all kinds of stock. I decidedly prefer morticed posts, as the rails are less likely to be displaced, and are also more easily renewed when broken or decayed. The posts and rails should not be placed too near the hedge—say at least five feet from it: if nearer, horses or colts can reach over and crop the young thorn-shoots, to their great injury.

In early spring the young fence should receive careful attention. All weeds should be eradicated, and, if necessary, the top of the bank should be carefully forked. It is very desirable that these operations should be performed before the young buds are made, as it is impossible to weed the quick sets without bruising, and knocking off some of the buds, which is very prejudicial, and backwards the summer shoots. During summer any docks or thistles which may appear should be cut off below the crown before seeding, and the bank will not then be disturbed or pulled down. Early in the autumn another careful weeding should take place, and throughout all the early stages of the growth of a young fence the greatest cleanlidess is most desirable. Weeds rob the soil of its nourishment, choke the young plants, and prevent the rain from penetrating to their roots. The pruning of the young fence should not take place too early, and then to no great extent at first; any very wild growing shoots may be cut off, so as to level the top; but the lateral branches should not be disturbed. If at the end of the third or fourth year the young fence looks stunted, and does not grow kindly, I recommend cutting off to within three or four inches of the ground in eardy spring, before the sap has begun to flow. I have sometimes seen wonderful results produced by this operation. and a very accelerated growth has followed. It must, however, be performed carefully, with a very sharp tool.

I come now to the management of the fence. It has long been a disputed point as to the best mode of treating a fence when the time has arrived for cutting or forming it into a hedge—say, the eighth year after planting; and I may here remark that it is really quite lamentable to see how many promising young fences are annually spoilt by the careless and improper mode of cutting. It may not be of very great importance whether the fence is pleached and laid, or whether it is simply cut down, preparatory to its being formed into the only true and serviceable fence, viz., the hog mane or wedge shaped, thick and strong at the bottom, and gradually tapering to a sharp top. I prefer the latter mode, as tending to produce the best future fence, although for a year or two, the pleached fence will be the strongest and most serviceable. Considerable judgment is required, and the work should be performed by an experienced workman, provided with proper tools. The thick, strong pieces should be cut down to within 6 inches of the ground, and the rest, according to their size, at different heights, but none longer than about twenty inches. Henceforward the trimming alone is required, which should be done annually, late in the autumn, after the sap has descended to the roots. I am convinced that no more injurious practice exists than the very usual one of cutting fences when in full leaf. The labourers of course prefer cutting when the branches are soft and full of sap than when they are hard and dry in winter; but it is wrong in principle, and should not be allowed. Very strong fences on very good land may not be much injured; but, generally speaking, the early trimming of hedges materially impedes and weakens their growth. On arable land the height of three feet six inches or four feet is ample, and the cost of trimming such fences, provided proper tools are used, need not exceed twopence halfpenny per chain. If all fences were therefore reduced to those dimensions, the annual cost, even upon a large farm, would not be great, and would amount to a far less sum than is now expended in pleaching large overgrown fences, and by stopping the numerous gaps which too generally exist. In pasture fields the height of the fences should be greater, say five feet and a-half or six feet, but the same mode of cutting should still be adopted, and the same shape preserved. I have seen numerous fences of this sort which in time have become like a wall, perfectly impervious, and presenting an insurmountable barrier to all kinds of stock. The cost of trimming these larger pasture hedges will be threepence per chain, if cut, as they ought to be, during the autumn or winter months of each year. I will anticipate an objection which may possibly be urged against trimmed fences, viz., that they are too often thin at the bottom, weak in many places, and forming a very inadequate fence against cattle and sheep. The cause of this is very obvious. Improper tools are used, and labourers totally unacquainted with the proper mode of trimming hedges are employed. How frequently we see on a wet morning in harvest-time men and boys all slashing away at the roadside hedges, with all sorts of tools, reap-hooks, broad-hooks, antiquated bill-hooks, and, in short, every sort of weapon but the proper one. I would ask, is it likely that the chance labourers upon a farm so provided will cut hedges with anything like skill or judgment? On the contrary, is it not the fact that, in nine cases out of ten, good hedges are spoiled? They are cut down instead of up, the bottom is cut away too much, and the top generally scarcely cut at all. No fence can long survive summer trimming and broad tops, the constant drip of which kills the roots. The lateral and lower twigs should not be cut too close, but the top should be cut away and trained into the same shape as the sketch which is before you. Even under the best system of trimming, I think it is desirable occasionally to allow the hedge to run wild for a year only; and I found it answered very well to abstain from trimming next to the clover or grass seeds which were to be fed with sheep in the summer; for, in the first place, the nuisance of the small pieces, which somehow or other are always left to annoy the sheep, is thus avoided, and, in the next place, there is no opportunity given to the lambs to browse upon the young shoots, which they are particularly fond of doing. Although I deprecate most strongly, for reasons already given, an unnecessary number of fences, I am convinced that true economy points to the maintenance of good strong fences, and such as really will answer the purpose for which fences are made. And this will not be found to be a work of any difficulty, if only a little attention and method are shown in their management. If possible, only one, or at most two, men should be employed to cut the hedges on a farm, and great care should be taken to furnish them with proper tools. A few lessons, and a little firmness at first, will be quite enough to teach a handy labourer how to do his work, and I believe that the very fact of his having a particular branch of labour entrusted to him operates as a stimulus to do the work well. On very light land I have sometimes observed old trimmed fences become a little cankered on their lower stems. This, however, has been entirely remedied, and at a small cost, by throwing up the soil to the roots on each side and indeed it is not a bad plan to treat one or two fences in this way every year. The soil is naturally washed away after a lapse of time, and I know nothing that renovates a weakly fence more. The system of pleaching fences is so generally adopted in this district, that it appears necessary to say a few words respecting it. The skill of the workman is quite as important in this branch of hedge cutting, as is the one I have just considered. Great care should be taken to cut down all the large and thick pieces, and to lay or pleach only those that are likely to live under the operation. The pleachers should not be too long, and plenty of stakes should be used. On pastures I think it desirable to use binders on the top, otherwise the cattle are apt to disturb the pleachers with their horns, and materially injure the fence in its early growth after cutting. At the time of pleaching, the ditch, if any, should be well cleared out, and all weeds well cleaned away from the roots of the thorns, fresh soil should then be thrown up and worked well into the face of the bank; the back should also be reduced to its proper size, and left with a sufficient slope. Many old banks are much too large, and may be reduced with great advantage; but care and judgment are required even here; for if a bank is cut down too steep and too close, the roots of the fence are exposed, and will gradually die away. On sandy soil also the turf will not take again, and a continual raw bank will remain a great eyesore and a constant nuisance. Great injury is often done to the young shoots of the fence during the first summer by cattle and sheep, especially the latter; and wherever it is practicable I would recommend that all stock should be kept away from newly pleached hedges for the first year. Although gap stopping can hardly be said to come under any of the three heads which form the subject of this paper, I cannot conclude my remarks without saying a few words on that branch of hedging, which I humbly think requires more attention and a better system than generally prevails. I fear it must be admitted that some gaps are inevitable, and as they must be stopped, it is desirable to ascertain the best mode of doing so. The very common, but very injurious plan of thrusting large masses of dead thorns or trouse into the gap is very objectionable. It not only entirely destroys all chance of any of the remaining live wood from shooting out and filling up the vacant place, but it frequently increases the size of the gap by killing all the live hedge on each side of it. I believe the best, and certainly in the end the cheapest plan is to use what is called Scotch fencing. Stout larch, ash, or hazle stakes should be driven into the ground about eighteen inches, at intervals of six or eight inches, in a line with the growing fence, another piece of the same thickness being nailed upon the tops of the stakes to keep them in their places. If this work is properly done it will last many years, and long before the stakes are worn out the gap will be filled up, the natural tendency of a white thorn fence being to extend itself in all directions. This simple method thus answers two objects—that of stopping the gap, and at the same time allowing the fence to fill itself up of its own accord. All other systems of gap stopping are merely temporary, and must be constantly renewed at considerable cost and trouble. I have now, gentlemen, to the best of my humble ability, given you the result of many years' experience in the planting, rearing, and management of fences. I hope my remarks have been intelligible; and if I have succeeded in giving you any useful information, I shall be amply repaid for the trouble. I trust that the discussion of this subject to-night will, at all events, draw some attention to a branch of agriculture, which I am sure is deserving of more consideration alike from landlord, agent, and tenant, than it usually receives.

Mr. Evan Davies said they were in a much better state with regard to the sizes of fields and the state of their hedges than they were in many other parts of the country. The plan of setting quick that was generally adopted, was that of planting it vertically; but Mr Keary's plan was for planting it at about an angle of 45, giving the roots plenty of room. Some of the best fences he had ever seen were planted almost horizontally. He spoke very highly of a white-thorn plan of fence, a model of which he produced. He wished to do away with those large hedges that occupied so much room, and acted as a kind of cover for partridges and other game. They wanted to grow more beef and mutton, and to do away with many useless hedges.

Mr. Keary said, he had hoped the reading of the paper would have given rise to some discussion, as he was not at all wedded to his own opinion if any better could be shown.

The Rev. R. More said for his own part he was very much in favour of continuous iron fencing, which could be put up at about 2s. per lineal yard.

Mr. Keary said he was also much in favour of iron fencing, because it was both economical in price and the space it occupied, and was also very durable. The strained wire fencing was cheaper than the iron fencing referred to by the Rev. Mr. More, and could be put up at about 1s. 2d. a yard lineal. Ordinary posts and rails cannot be put up, and find the timber, under about 14d. or 15d. a yard, and they were not near so durable.

Mr. R. Jasper More, M.P., wished to know from Mr. Keary how his plans would agree with the high country, such as the Clee Hills, where the temperature was so very severe, and where some farmers say greater protection is required for the flocks and herds by means of high hedges. In Shropshire it was considered a very large field if it was 30 acres in extent, yet in Norfolk, they have some of 70 or 80 acres in extent. It would be, of course, difficult to propose a general rule to meet all cases.

Mr. Keary said he certainly had not studied in his paper the subject of "high latitudes," but he thought it was necessary that some steps should be taken to call public attention to the subject. He wished to speak against unnecessarily large fences, as he believed the wedge-shaped fences were the best—thick at the bottom and tapering upward. In those large fields in Norfolk these kind of fences are the best for sheep. As to the Clee Hills, he was not much acquainted with them, and his remarks were more adapted to those parts of the country in their own neighbourhood.

Mr. Evan Davies said he thought good sheds may be run up at a moderate expense to protect sheep, &c., in high latitudes and in other places, which would be far more serviceable than high and large fences.

Some further desultory conversation took place, when the proceedings terminated.

THE VALUE OF OILCAKES.

Dr. Voelcker makes the following remarks on the condition in which various cakes are offered in the market:—

We often forget that animals have appetites as we have, and that they like food in a good condition better than food in a bad one. The composition of two samples of the same food may not vary much, yet the practical effect produced by them may vary exceedingly. Animals never do well on very old cakes. In examining, therefore, the different cakes, we ought to examine particularly their condition. I allude especially to the examination of cotton-cake; the colour affords an excellent criterion as to its freshness. The freshest cotton-cake is as yellow as mustard. As it gets old it gets brown; but the interior is bright yellow—very different from the part that has been exposed to the air. The deeper the brown colour has penetrated, the older the cake, and the more it has suffered by bad keeping. If it is kept in a damp place its colour and condition are rapidly deteriorated. The best rape-cake is green German rape. I believe it is as good as linseed-cake for store cattle. The difference in their composition is very trifling. The proportion of oil is nearly the same. Some foreign cake, especially Indian cake, is often made of seed which is full of mustard. Several cases of poisoning have occurred from its use. It is a safeguard against mustard-seed in cake to steam it before use.

Of the specimens which passed through the hands of Dr. Voelcker in 1860 he reported—

At last three-quarters of all the linseed cakes examined by me during the past season were either grossly adulterated, or were cakes of quite inferior quality. The practice of recrushing oilcakes and mixing the powder with a certain amount of bran before replacing it into the presses appears to be gaining ground. Good decorticated cotton cake has become much dearer, and is bought up as soon as it arrives in this country, and is consequently rather difficult to obtain of first-rate quality. One of the most useful oilcakes is green German rape cake. Several excellent samples were sent for analysis, and also some samples of common and of Indian rape cake. The examination of these cakes has strengthened my conviction that whilst green German rape cake may be used with perfect safety, it is dangerous to give to cattle other kinds of rape cake, inasmuch as they frequently contain mustard in injurious proportions.

Recently attention has been directed to the probable importation of Egyptian dates in years of plenty. Of the same kind is the locust or Carob pod, an importation from the Mediterranean, containing a good deal of sweetening matter, and useful as a fattening food.

The advantage and the profit of these additions to the ordinary green food, straw and hay, of the farmer depend a good deal, first, on the quality of the home-grown food; and next, on the quality of the cattle bred or purchased to consume it. The turnip crop of some districts is a great deal more nutritious than it is as grown elsewhere. The experience of Scottish feeders and turnip-growers is thus never realised in England.

Mr. M'Combie, of Tillyfour, in Aberdeenshire, says :—

I fat from 300 to 400 beasts annually; my average price for them in London this season has been £35 a-head; I never exceed 4 lb. oilcake and 2 lb. bruised oats a beast per day; they have what turnips they can consume, and oat straw *ad libitum*. £12 per acre is my average profit in feeding on Aberdeen yellow and Swedish turnips. I sometimes realise less, often more. This cannot be paralleled in the south, where we often hear that feeding cattle are a necessary evil—necessary for the manure made during the feeding process, but an evil for the loss consequent upon it.

Even on the most nutritious of home-grown food, however, and perhaps then more especially, it is profitable in the case of well-bred cattle to add from 4 lb. to 8 lb. of meal and cake to the daily ration of pulped roots and chaff. But on the quality of the cattle to which this food is given more than any other thing depends the profitableness of the process.

The *North British Agriculturist* says :—

A correspondent on this subject once called our attention to his mode of cattle feeding. He had a lot of small cattle (some of them sold fat at 42 stones each) fed on half a cwt. of pulped turnips and 2 lb. of rape-cake, and 20 lb. of cut wheat straw daily. "They are always full, and seldom on their feet, except at feeding time." The account he gave indicated that they were doing very well; and he asked—"Do you think the cattle could assimilate a greater portion of nourishment? I have no wish to have my food pass through them unappropriated by the system."

Now this was a question which we were unable to answer, for the reason just referred to. The elements of the case were not before us. It was not sufficient to say that the food in question contains daily 1¼ lb. of nitrogen, 11 lb. of starch, and ¾ lbs. of fat—that the proportion of the nitrogenous to the non-nitrogenous elements is as one to eight—nor even, taking the more practical aspect of the question, that the daily cost of the food is about 5d., while the animals which in January were in "a very lean state" were expected to be "fat by the end of May." The fitness of food depends, not on the general consideration of animal nutrition, but on the character of the animals in question; and of that we had no sufficient account. Well-bred shorthorn cattle would make the full use of a much richer diet than the one here specified, while ill-bred mongrel starvelings would waste it.

We had then before us an instance illustrative of this—a flock of mountain sheep from Lancashire had been introduced into one of the southern counties, where, on pastures richer than where they had been bred—on Swedish turnips, too, given to them there—it was expected that their progress would be proportionably faster. This, however, had not been the case. When fed on richer food they became liable to disease, and even when the quality of the feeding was reduced so as to suit their health, the rate of improvement was not so much the quicker as to pay for the greater cost of food beyond what they would have had in Lancashire. The grass and swedes and hay that they had would have made more mutton on the body of a Down or Leicester sheep, and have yielded a larger money return.

The same holds true in other breeds and animals. The feeding which we hear of, as given to well-bred shorthorn steers in the feeding yards of Yorkshire, Lincolnshire, and Norfolk, may be profitable there, and wasteful under other circumstances. Shelter, warmth, and quiet are profitable everywhere, and nutritive food of course must make more mutton, beef, or pork than what is innutritious; but here, as in every other branch of agriculture, general rules must be accommodated to circumstances. The degree of every particular style of treatment must be accommodated to the individual character of the animal and the general character of the breed to which it belongs. The most profitable management of a well-bred animal involves outlay of shelter, food, and attendance that would be thrown away upon a Kyloe.

QUESTIONS FOR DISCUSSION AT FARMERS' CLUBS.

At the first meeting of the Barnstaple Farmers' Club, the President the Rev. Mr. BRERETON, who delivered the opening address of the session, said: I do think that this Club possesses now in a remarkable degree the two great evidences of success: the one, the satisfaction of its old members; the other, the readiness of other gentlemen not only to regard us with favour but to become members. We owe this state of things partly to our performances, though much also to our promises. With regard to our performances I do think that during the last year we have been able to obtain for the profession and occupation of farming in this neighbourhood such a public recognition as it thoroughly deserves. When the farmers of this neighbourhood formed themselves into a Club the importance of the step taken was recognized not only by all thoughtful men in the neighbourhood but by very distinguished men indeed; yet I must acknowledge that our performances have not quite equalled our promises, and on one point I hope that during the coming year we shall be able to carry out more effectively an important part of our programme than during the past year —I mean our monthly meetings for discussion. I very much hope that the members will think it a matter of importance by their punctual attendance to encourage these meetings. We propose that they should be held on the last Friday of every month at the hour of half-past three. Last year we drew up beforehand a programme of a series of subjects for discussion, but we think, after the experience we have had, and taking into consideration the many interruptions that may occur, it would be desirable merely to select from month to month the subject to be so discussed. I have had the opportunity of talking with some gentlemen of influence in the neighbourhood, who have expressed a desire and readiness to assist by coming to give lectures or to take part in discussions which may arise on subjects that seem of importance to the Club. Lord Fortescue will be glad at any time to come and help us in any way, and also Sir Stafford Northcote. I may mention also that Mr. Nicholas Whitley has kindly promised to give us a lecture. Of course, to a certain degree, we must consult the convenience of those gentlemen; but I think we may, during the coming winter, have the advantage of listening to some gentlemen whom the agriculturists of this neighbourhood, and even in a wider circle, would be proud to listen to. Without, therefore, on the present occasion selecting a definite programme, but leaving it to the committee, according to circumstances, to choose the subject for future discussions, I would still venture to remind you that all the subjects, numerous as they are, that are of interest to the farmer can really be classed under five simple heads. First of all must be what concerns the land the farmer cultivates, including with the land questions of soil and climate, which must be primary questions, since they more than any other determine the practical bias of a farmer's business. The next great class of subjects to be considered by agriculturists will be with reference to the plants the farmer shall grow on the lamd he occupies; and it is necessary that he should have a knowledge generally of plants, so as to form a selection, and, having formed a selection, that he should obtain an accurate knowledge of the nature of the special plants which he chooses to grow. And I may mention here that it is not only questions of soil and climate that will decide that selection of plants, but, more, perhaps, than anything else, a question of market. I have read, in an old account of Devonshire, that about the middle of the last century a great deal of the land in this neighbourhood, particularly that around Combmartin, was entirely devoted to the culture of hemp and flax. I think there is very little flax grown in North Devon at the present time, and the principal reason is the great difficulty in finding a market for the fibre. One of the gravest questions which we touched upon last year was as to whether it is better to grow corn or to grow grass, and of course, to a certain degree, it depends on the soil and climate, but principally on the market. The point to decide is whether, even if you are very favourably situated for growing corn, the price you can obtain for it is a remunerative one. But the third great-class of subjects will have reference, not to plants, but to the animals which the farmer selects for the land he cultivates; and here there is greater facility, perhaps, for change, because it is more easy to turn from keeping one class of animals to another—to change one peculiar kind of sheep or bullock to another than to change the course of cropping. But this facility of change, from the readiness with which the animals may be removed, is in itself a temptation which the farmer ought to avoid; that is, he ought beforehand to be so well acquainted with the characteristics of the different kinds of animals that if, owing to a change of market, a substitution is rendered desirable, he does not make it hastily or experimentally, but knowing the nature and qualities of the animal he is about to substitute for that previously reared. Here are three great classes of subjects, then, which farmers' clubs ought to consider—the land, the crops, and the animals. But besides these, there is another very large sphere for the farmer's thoughts and consideration—the men with whom he deals; and I think the subjects connected with this division ought to come under our consideration as a club. These are principally three. The farmer deals first with the owner of the land; in the next place he buys of, and sells to, a very large number of different tradesmen and others; and in the third place he hires labour. I have only to allude to these departments of a farmer's business to remind you how important it is that the relations of landlord and tenant, of purchaser and dealer, of master and servant should be thoughtfully and carefully weighed by a body of men who in their daily life are constantly obliged to act upon considerations which may not only to themselves but to the whole neighbourhood prove to be of vital consequence. I have only just now, on turning over one of the papers lying on this table, seen my own name alluded to in an article in which the writer expresses a regret that when I was in the neighbourhood of Tiverton and an allusion was made to the question on which a controversy has sprung up between Canon Girdlestone and the farmers of that district, I had not thought it my duty as President of this Club to take a part in the discussion. In my opinion the relation between the employer and employed is such a serious one that no one ought offhand to hazard an opinion about it. However, as President of this Club I should like to introduce this as one of the special subjects of discussion—"The relation between the employer and the employed." I should not enter upon it more as the farmer's friend than as the labourer's friend; for I have long persuaded myself that the truest friend of the labourer is he who begets in him an increased interest in his employer and his real work. Well, gentlemen, I might seem to have exhausted all the subjects a farmer or a farmers' club is interested in; but I must remind that there is one more, viz., the farmer himself—the man who, at the penalty of loss and perhaps ruin, is obliged to deal with land, with plants, with animals, and with his fellow-men. How is he to maintain the position he holds? how is he to improve that situation and improve himself? Surely there is another great range of subjects that may in course of time occupy us as members of a farmers' cub—and the allusion Mr. Guppy made to a school in this neighbourhood which I have been interested in establishing must be my excuse for venturing to say to those gentlemen present that the education of themselves—of that class to which they ought to feel proud to belong—is a subject which is well deserving their serious attention. I have made these few remarks, gentlemen, to you on the present occasion only as indicating the kind of subjects to which I think we may through the coming year—and I hope for many years to come—bring carefully and thoughtfully, and with the kindest disposition, the influence of this very important Club to bear. If I should not be anticipating some better proposal, I would undertake at the first meeting for discussionto introduce the subject to which I have referred—the employer and the employed. I thank you very much for once again electing me as your President. I can only say—and I say it most sincerely—that as soon as ever the members of this Club think it more for its interest to ask some gentleman, of whom there are so many qualified in this neighbourhood, to take the presidency, I shall not feel relieved of any of the interest I take in the Club, but shall feel rather proud that the office I now hold is one that some worthy successor will be proud to occupy.

THE LABOURER AND HIS PROSPECTS.

At the dinner of the Dunmow Agricultural Society, on Oct. 2nd, the President, Mr. H. J. **Selwin**, M.P., said: No one would deny the utility of meetings of this sort. If for no other consideration, he thought they were desirable as bringing neighbours together, and giving themselves, as it were, rallying-points at which to meet those who lived around them. But, above all things, they were desirable because at them the labourer was brought into friendly relation with his employer, and got to realize and appreciate the efforts made to improve his condition, and the good feeling that dictates the attempt; while at the same time the employer was made to know, if he never knew before, that the man by the sweat of whose brow he lived was something better than a mere machine—something to be cared for and looked after, and urged on in his career in the world; and thus each helped the other to carry out the great work of life. But, beyond this, he attributed great good to the fact that in this way they were taught the lesson that they were not sent here merely to study their own interests and their own advancement; and there was also another point in which these meetings exercised a beneficial influence over the neighbourhoods in which they were held. At them different subjects, such as the improvement of the dwellings of the labouring classes, the scarcity of labour, and how that scarcity may best be met by the introduction of the newest inventions in machinery, and other similar matters, were discussed and considered. In this way opinions were ventilated and experiments suggested; and when these experiments were put into practice, and success followed them, the whole neighbourhood was benefited; and thus these societies had silently, but slowly, done their work, and helped forward the cause of science and agricultural improvement. But they must remember that in these days, when our population was rapidly increasing, and when the demand for food to meet the supply for the people was growing larger every day, it behoved them to look for the best possible means to supply the deficiency which had arisen, and would arise, in the labouring market. As our manufacturing towns and our railways drew away our labour, farmers and agriculturists would have to look for machines to supply the deficiency; and he could not help thinking the want would be supplied, because as they got machinery they would get a better, because a more instructed, class of labour with it, and would get their work better done, and therefore more of it done. But if they got a better class of labour, they must remember this—that the labourer must occupy a better position. If they made him more useful, and gave him greater skill and greater instruction in his work, they must remember they had raised him in the social scale, and given him greater cultivation and greater wants; and, as one result, they ought to see a better class of habitation, as he was glad to see was already the case in many instances, springing up throughout the country, the landlords being brought to regard the labourers' cottages as being, after all, not an investment, but an adjunct to the cultivation of the soil; and in this way he hoped to see the day when, the comforts of home growing up around him, the labourer would make his cottage his home, instead of the beer-house, so that the vice of drunkenness, leading as it now did to many crimes, might, to a certain extent at any rate, disappear from among us, and the labourer be not only improved in skill, but an improved man himself. If this should take place, and if it were brought about by any agency in connection with these societies, he thought they might say, on consideration, that they had done their duty.

TEXTLESS NOTES.

BY A CROTCHETY FARMER.

My readers having now been fairly accustomed to the very crotchety nature of my notions and my mode of treatment of them will probably not be surprised to learn that the subject of my present note may be entitled "A Sermon without a Text." Nor is such a sermon, I take it, by any means out of place in the pages of this Journal, which has always been distinguished not merely for its able expositions of agricultural and practical science, but for its plain statements, and, as I may say without any fear of being charged (if, indeed, I fear such a charge) of being crotchety, its manly utterances of what may be called "agricultural moralities;" nay more, by its distinguished and—I am proud to say in these days of scientific free-thinking—noble expression of its belief that there is something in all our experience which is daily leading us in all humility to the feet of Him who rules all things wisely and well, to own His power and our helplessness, and that there is something to be thought of besides mere money-grubbing; and that, further, the relationship between master and man carries with it something more noble and aspiring, something more connected with our higher interest than those connected with the motive of how much we may make out of each other, and how, to speak frankly, we may do best for ourselves and second-best (if best at all) to our neighbours. Considerations such as these, I say, convince me that my sermon without a text will not be, as I make bold to say it is not, out of place in a page of the present Journal; all the more that its subject is supplementary, or may be considered so, to some remarks on the relationship existing, or which should exist, between the master and his servant, which some months ago I had the privilege to present to its readers. Nor will they now, on due reflection, consider that the subject of my sermon is foreign to this relationship, for right well assured am I that their experience has been, if it is not now, like mine, that much of the misery shall I call it?—certainly much of the annoyance of actual every-day working life arises from an indulgence of the habit against which I am about to *preach*. For it is, I conceive, of wretchedly small avail to ignore the fact that the high tone of morality which we all profess to love and revere has an influence of a most potent kind upon the working relationship between man and man. We may ignore it, nay, we may persistently deny its existence or its worth, but its influence will crop out in a way so marked and decided, that we shall be compelled to own that we feel it. Without further preface, then, I proceed to my sermon:

In the whole range of suggestive and most touching incidents recorded in the life of our Lord, there is none so suggestive, few so touching as that which we find narrated of the woman taken in adultery. While it rebukes so readily my eagerness to condemn a person in a fault, and brings home so pungently the consciousness of how prone I am to commit a fault myself, while it cuts so keenly at the bitter root of pride and self-esteem, it teaches me also a lesson which is perhaps not often derived from it. For I read that as the accusers pressed fiercely forward, each eager to tell his tale, and by implication convey that in his denunciation of the sinner he at least was free from the sin, Jesus sat on the ground, and made as if he wrote thereon. It seems to me, in thinking over this apparent indifference of our Saviour to what was going on around him, that by it he meant to say—"True as this evil story, or story of evil may be, I will not listen to it. Come to me with tales of good, or stories of human woes or human wants, I will hear you out; but tale-bearing and slander I cannot away with." It is indeed very striking, this determined indifference of our blessed Lord about the *hearing* of evil, as is the reproof which this indifference conveyed to those who displayed so much eagerness to tell of it. And it conveys this lesson—at all events, it does so to myself—not to be a *listener*, even to evil stories. I have often felt how rapidly evil-speaking—alike in its plainer and blunter utterances, as in the cowardly suggestions of its quieter insinuations—would be checked if the individual to whom they were being conveyed *refused to listen to them*. There must, in the very nature of things, be two parties to complete the record of evil-speaking—the narrator and the listener. Nothing, indeed, delights an evil scandal-monger so much as a good listener. In this case, is not the receiver as bad as the thief? I clearly think he is. If the congregation could not be got together, would the sermon be preached? Like actors, gossipers and busy-bodies have no notion of speaking to empty benches: they like to see them filled with rows of eager faces and listening ears. It would be a fine thing if we were all as glad to tell of the good in others as of their evil. I remember well on one occasion, when a large party of men and women—if, indeed, they were deserving of the nobility of the name—were amusing themselves by tearing to tatters the character of an absent *friend*. One who did not join in this pleasing pastime after a time took advantage of a lull in the storm of scandal which swept round the room to say, in a quiet way, "Come, we have heard much *against* our friend: if for no other reason, at least for the sake of novelty, let us see if we can say anything *for* him. He cannot surely be altogether one of the wicked." The rebuke, all the more racy from the gentleness with which it was delivered, went home like a dagger to the hearts of all; and in the silence which for some time reigned, sober and seemlier thoughts, I hope, were at work for a while. Some people, in the eagerness with which they are perpetually retailing scandal, seem to me to be the very scavengers of society, always raking amongst its mud and filth to find some odorous and filthy things to fling at folk. Of these, who are perpetually strewing in society the seeds of scandal, and who seem to wait eagerly for the coming crop of discord, it may be said that their path may be tracked, like that of the snail, by the slime which it leaves behind it. I, for one, confess to being at least ambitious to belong to a nobler class: hence, while *trying*, with God's blessing—without it, the trial will be a failure—to *speak* no evil of anyone, I would give equal importance to the duty of not *hearing* any. It does not follow—as some think it does—that *because* the evil which may be said of anyone is *true* that therefore it may be spoken about. What is the lesson which the incident I have named in the beginning of this paper teaches us? He who knows all things knew well enough that the story told of the poor trembling sinner brought before him *was* true; but not the less decided was his determination not to hear it—anything but that. It would be well if we all tried in all things—well for you the reader, well for me the writer who now addresses you—to follow in the footsteps of Him whose every action was prompted by love to fallen men or degraded women. I pray the reader to note here that I speak of our trying; little more, alas! in too many cases than this, is left us, for the complete success of that is not given to humanity; but trying, nevertheless, is a grand thing. If we try to keep ourselves pure, we shall be the less frequently defiled; if we keep the goal constantly before us and try to reach it, we shall make some progress; while if we think nothing of it, linger and loiter asleep by the way, we know what the result must be. While remembering then the way in which individual peace and family happiness are ruthlessly destroyed, through speaking of evil, let us not forget how much its ills are intensified through listening to it. It is difficult to touch pitch and not be defiled: no less so is it to hear evil without being touched by it. Evil *communications* corrupt good manners. We are told to do *good* and to communicate it. Some live such a wretchedly inverted life, that they wait only to know of evil and communicate *that*. What stinging satire should there be to such in the saying that evil news find quick messengers! Who would not, if the Eastern belief of transmigration of souls was true, rather be the dove with its message of life and peace, than the vulture with its tidings of death and carnage?

"Speech" says, in his quaint way, and if our quaintest, by the way he is sometimes one of our obscurest writers—"Speech is silvern, silence is golden;" and if my tongue then must wag, as wag it often will, let it wag only with words of good speaking of my neighbours. Possibly in view of this desideratum to be arrived at, we might with safety invert the above doctrine, and say that when we can speak good of our neighbours, that speech is golden—silence silvern. At all events, if I cannot discipline myself to speak only of the good of my neighbour, I must discipline myself to keep silence, and, moreover, not be a listener to the evil speaking of another—to turn a deaf ear to the charmer, charm he never so wisely.

"WORDS ABOUT WASTE."

The subject of my note on this occasion is one specially addressed to or bearing upon the condition of the farm labourer. Its title may be put as *words upon waste;* and if I used texts, the text might be "that nothing be lost." The remarks which I am privileged now to make have a direct utility at all times, but they have a special one at the present time; when without in any way being desirous to take the part of a prophet of evil, I may say that there is a probability of the necessaries of life, if not all, certainly some of them, being unusually high priced. It may be accepted as an axiom that the more carefully we use a thing, the more valuable does it become to us; and also that carefulness does not include in any way the notion of stinginess. If then, these words of mine about to follow reach the notice, as I am vain enough to believe that they will, in some way, direct or indirect, as the case may be, of those who "live to labour and labour to live," I trust that they will do themselves, if they do not do me, the favour to believe that they possess some value: the words I use may be strong, the spirit in which they are written is gentle; the medicine they convey may be bitter, the end it is designed to serve sweet.

In the economy of nature—and it is a school in which many rare things may be learnt—while everything surrounding us tells of *change*, there is no such thing as *waste*. We may talk certainly of consumption, as if that were equivalent to annihilation; there is no such thing however as the latter: there is simply a change of condition. Philosophy tells, and tells us truly, that if we consume a lump of coal in our grates, or distil a piece of wood in a retort, and if we are at pains to collect the gases which result from the processes, that these gases will exactly, neither more nor less, not even by the difference of the thousandth part of a grain, weigh the same as the material originally subjected to them. There is no waste—merely a change of form or condition. So then it may be truly, as it has been supposed by some to have been merely poetically said, that we are literally formed of materials which, in ages gone by, peopled our earth; and that the contrary is equally true—that the material of which we are composed will in like manner go in future times to make up the forms of other beings, or of objects of utility and beauty. And it is a fine thing to think of the adaptability to our every-day wants, in this absence of waste, this change merely of the form or condition of matter; for the waste of to-day, as in our ignorance we choose to call it, yields substances which minister to the needs of to-morrow. The refuse of the streets of our towns adds to the fertility of the soil of the country districts; the smoke which dims the sun-light in the city lends in the country a fresher green to the waving grass, a richer loveliness to the flowers of the field. There is in nature, therefore, nothing lost; and the lesson which this grand truth teaches us should not be overlooked, and to it I propose to direct somewhat close attention in the remaining paragraphs of this note.

Although unknown to the classes whom he now desires and hopes that he does specially address, the writer may say this much for himself in support of his right to address them—that he has spent much of his time in advocating their interest and in supporting what he conceived to be their just pleas to the care and attention of their employers and those placed in happier, because freer, circumstances of worldly condition. He therefore believes that the having said and written much for them, gives him a claim to say a little to them. That little at the outset he most frankly states is much more in the way of blame than of praise; he leaves to others the task, or pleasure as it may be, to sound the praises of what are called the "working classes;" to ignore their faults and to make the most—shall we say the very most?—of their virtues. As for himself, he has no new intention, as he never has had any desire, to mince matters, to use fine words, to deck out and decorate foul things.

What I have therefore to say I say plainly, yet I hope with all kindly consideration; for I should be doing my reader, as I would be doing myself, a wrong, if I forgot this consideration of the feelings of those who live to work and work to live. To the "true men" amongst those I address—meaning by this designation those who in the time of prosperity look forward with calmness, even although with dread, to those of adversity, because they have done what they could to mitigate its miseries—it is needless to say that, as I deal censure, that censure does not apply to them. Those to whom I hand the "cap" or the "saddle" will well and easily know whether it fits or is likely to fit the head, or to sit well upon the back.

To labour, then, is the appointed lot of all of us; we are all, in a sense, working men; and nothing is more honourable than honest work, although the dazed dandy or the mincing miss affect to despise it. To serve the right purpose of labour, however, it is right, nay, it is absolutely essential, that the work it affects should not only be well done as work, but that what proceeds—may be obtained for it—may be rightly or well used. It is not enough, my friend, that you point out to me that you work hard, to show me how industriously you make its gains: your duty is not complete in the matter till you show me that you use them rightly. It is not—would that the truth were known in lordly mansion as well as in lowly hut!—it is not the amount of the gains which secures competency and comfort, but the amount of that which is used judiciously. What is gained with painful labour may be squandered sillily—not merely in the recklessness of riot, but in the carelessness of little things in the house. It is indeed the great characteristic of the prudent man, and that which distinguishes him from the man of opposite tendencies, that he is more careful in small things than in great ones, as if he knew—and he does know—that not only are small things apt to be overlooked because they are small, but because he knows that if the little things are attended to, the great ones are sure to be. He rarely forgets the proverb, and the vast fund of truth which it conveys, "Take care of the pennies, and the pounds will take care of themselves." In any establishment, no matter what, that servant in it is marked by the master for promotion in the management of great who has been noticed as careful in that of small things. Now you must bear with me when I say that in my experience of your ways—and it has not been in any way limited—you working or labouring men are *not* distinguished by this carefulness over or about small things; indeed, on the contrary, most painfully have I witnessed your indifference about little things in household and domestic economy. It seems to me as if you had a most thorough contempt for all "saving," and to be embued with the notion that this means "stinginess." My good friends, to be saving is not to be stingy; it is not mean to be economical; and this I maintain to be true, no matter what is said, or by whom said, to the contrary. No one but likes to be thought to be possessed of a generous spirit—that spirit of which it is said that its belief is that it is more blessed (as indeed it is) to give than to receive; but one is apt to forget that before you can give you must get, and after getting you must save. What says the wise man of old? "There is much profit in the tillage of the poor, but there is—ah! *how much* there is!—that is *destroyed* from lack of judgment." It is not safe, as it is by no means dignified, thus to despise—as too many amongst you do despise—"little things." Pray consider well the power of little things in nature, and you will learn from this consideration their power in those matters which concern your daily doings in life. What makes up the river as it rolls its majestic waters, and bears on its bosom stately vessels on the sea? What but a countless multitude of little drops? Each one of those drops splashed in the tiny brook at the river's source, or glittered in the blades of grass, or sparkled in the petals of the flowers which decked its banks. "'Tis sand makes the mountain; moments make the year." So sings the poet, and it is true; nor should you, whose daily life is in the labours of the field, forget that the stores of our bursting barns are made up of an aggregate of single grains. Brick by brick the house is built; and if you deem a man nothing but a silly fool who would expect his house to rise up as if by the magic of the conjuror's wand, is he less silly if he expects to be rich in big things if he neglects to save the little ones? And yet this is what many of the labouring classes practically do, and grumble grievously if they see any one rise in the world who does mind little things, and do not hesitate to say that it is impossible that they can rise. The truth is, that every man has it in his power to make some progress. Of course, it does not follow that the speed of the tortoise will be naturally greater than that of the hare; yet, as the fable teaches us, the tortoise may gain the race if the hare slumbers while the tortoise crawls. Good times are only good in name, if out of the abundance or comparative abundance which they yield something is not stored up for the evil ones which may come. Better far, indeed, for the moral condition at all events of man, that good times so-called did not come to him, than, if coming, they are only used for worthless purposes. Nor do I believe, myself—and I should like any working-man reader to believe this great truth also—that there is anything whatever in the circumstances of the condition of the working-classes in this country calculated to crush him down and keep him down, as some demagogues tell him he is crushed down and kept down. In such men the truth is not. Infinitely better were it for the working-man to believe, in place of believing this falsehood, that there is no crushing like that brought about by the exercise of imprudence and reckless waste—no keeping down so powerful as that brought about by the indulgence of evil habits. Believe me, my friend, that the true tyranny we have all to fear is the tyranny of personal and individual evil.

Of course, all this, and more than this—as more might easily be said—may be met now, as it has been met before, by the assertion that it is not in the power of the working-man out of his pittance to save anything. This we have lately been told in the high place of Parliament, and, having been told us there, it must, I suppose, be looked upon as true. I for one do not, however, believe it, although told this by those who ought to know better, and who, say what they may, *do* know better. The wages of many may be so low that nothing can be saved out of them; but *the* saving which is the result of careful management is within the reach of all. If you cannot secure direct saving, this I do know—that you *can prevent waste.* For how does it come about that in the case of two families, both in receipt of the *same* income, we find in the house and about the person of one of the families all the evidences are abundant of comfort and happiness; while in the other, we see the demon of discord—the signs of wretchedness and want? A shilling is but a shilling, in your hands or in mine; and if I can get more out of it than you can, it is clear that it must be by the way in which I use its proceeds. Is it, or is it not, true that care brings comfort, waste brings want? I do not here say anything, although indeed I might say much, on the waste of means brought about by putting away one's income in repeated "gills of ale," or "little goes of gin-and-water:" I refer here, and most specially, to the waste of materials which are used in the house. While I write, memory brings before me the painful features of many a walk "amongst the huts where poor men lie." Pieces of bread tossed carelessly out of cottage-door, and trampled under the feet of the passer-by; great slices of potatoes thrown out into the kennels—not parings or peels, but large pieces of the potatoes themselves; capital good warmth-giving cinders, and not only cinders, but actually lumps of unburnt coal, thrown out into ash-pits and upon meadows: all these, aye, and much worse than these, I have noticed in my rambles amongst the houses of working-men—shameful, or rather shameless, waste, not once, and in a way perpetrated as if by a mistake, but regularly done, and so little thought of, that where attention has been drawn to the circumstances, they have been pooh-poohed as matters of no moment; and the opposite course of careful saving stigmatised and sneered at as mean, stingy, and narrow. I have heard, or read somewhere, of a party of gentlemen who were collecting for a charitable purpose, and who, about to knock at a door where they contemplated a call, were "given pause" in being made the unwilling listeners to a scolding which the master of the house was giving to a maid for the "waste," as he called it, of a single match. "No use to call here," was the apparently wise commentary of one of the party; "no use to call here for money, if a match is grudged." "No matter," said another; "as we are here, at all events let us go in." And in they went; and on being ushered into the presence of the proprietor of the house, they explained the purposes of their visit. Their tale was but barely told before a sum munificently large was placed delightedly at their service. Astounded beyond measure at the contrast between the magnificence of the gift and the apparent stinginess of sentiment of which, unwillingly, they had been made to be the auditors, they could not resist recounting the circumstances to their generous host. His reply was as ready as it was striking and suggestive: "Ah! if I encouraged waste, I would soon know what it would be to want! In my care of little things lies the secret of my being able to do great ones." And this is but a paraphrase of a thousand-and-one sayings, all of which bear upon the truth that he who is careful over little things is sure to have the care of large ones. And the lesson of carefulness comes to us from the highest of all sources. In the best of all books—which, I regret to say, is by many now-a-days lightly esteemed, if, indeed, esteemed at all—there is a record of a miracle which seems to my mind to be remarkable for two things. It is that of the loaves and fishes; and the two things which render it remarkable are, first, the power which our Saviour displayed in providing for the multitude an ample supply of food from such limited resources as "five barley-loaves and two fishes;" and secondly, the care shown by Him as to the saving of the fragments of that mighty feast. "Gather up the fragments, that nothing be lost," was the charge He gave the wondering disciples, just as if He had said, "I have shown to you this day the power of Omnipotence providing great things; but I design no less to show you the care I take of the little ones. Although I can command the wealth of a world, I am as careful of its smallest portion as if I had no resources." What a lesson of suggestive wisdom does this convey to you and me!—a lesson so plain, so easy to be understood, that, literally, "he who runs may read." If we possess unbounded wealth, we are none the less called upon to be careful of the veriest trifles. What nobler or higher evidence can be given us than this gives us of the *dignity* of economy? that there is *no* meanness in being saving? that there *is* meanness in the waste which brings want, none in the saving which brings security against it? It is curious how different are the views which poor people take of saving, according to the circumstances under which they are placed: they can save to *get out* of a difficulty, while they will protest most lustily that they cannot save to *keep out* of it. "I wish," said a working man to his master—"I wish that you would lend me five pounds." "Willingly," was the reply—"willingly; but what do you wish it for, and *how* do you propose to repay me?" "I want it to get rid of an execution for debt; and I will repay you by instalments of so much a week, to be kept by you out of my wages." "Tom," said the master—"Tom, does it not strike you that, if you can manage to do this now, and for some time, you could certainly do it always? If you can save at a pinch, could you not save without one?" The honest man had never, probably, taken this view of the matter, thoroughly reasonable as it was and is. It is astonishing how logical some are, in treating of their neighbours' affairs, and how unreasoning when they try to treat their own. I have known a man prove to me most cogently his neighbour Jack Brown could easily save, and ought to do so for the sake of his wife and children, so much out of his wages, while the joke was—if joke such a story could be—that he himself had actually more wages than Brown, and never saved anything. Sundry glasses of ale are drunk and divers screws of tobacco are smoked, without a single thought of the sums which could be laid aside for a rainy day, if mere luxuries were dispensed with. Not that I would really advocate the deprival of the beer of the poor man, nor, for the matter of that, his pipe either; for, if we have our luxuries, why should our poorer neighbours not have theirs? but I certainly do insist that, while the poor man has these luxuries, he should use them moderately. The great mistake which lies at the root of the "want" of the labouring man is just this—that he will not believe that in the expenditure of *trifles* lies the waste which brings the want. You will hear him again and again saying that it is of no use to save this twopence and that penny—that *that* can do no good. If he could only be got to believe that it is not in the amount of his makings, but in that of his savings, that his real wealth lies, some striking good would result from it. A working man who saves a pound a year is in reality a richer man than he with ten thousand a year who saves none. Let the working man begin to save a penny a week, he will be urged—I know he will—to try to save twopence the next week. True, it may be advanced, in answer to all that we have said, that a man has a right to do as he likes with his own. Not so fast, my friend. Try to see how such a principle will act towards you in the time of distress, when you expect your richer neighbour to help you. I maintain it as incontrovertible, that no man has a right to consider himself, where society has a claim upon him; and if the poor man will dispute this claim, will do what he likes with his earnings in good times, crotchety as the notion may appear, I nevertheless maintain that in times of distress he has no claim upon others. If he has a right to spend foolishly, he has no right to claim help when the distress comes which is the inevitable result of such folly. He who knowingly flings himself into the sea need not complain if the life-buoy is not thrown out to him. Why should he who sets his house on fire complain if the fire-engines do not come and put it out?

Much as I have said on this point of waste and its connection with want, I could say much more. The importance of the subject cannot, indeed, be over-estimated, nor is it a difficult thing to prove that a large amount of the want of the poor arises from their waste.

HINTS ON DAIRY FARMING.

Dairy husbandry has long been a most important branch of the rural economy of the United Kingdom. Milk and its different products of butter and cheese enter more or less into the daily bill of fare of all classes of the community. Milk is a true food, that is, it contains a combination of all the various materials necessary to supply the daily waste of the bone and muscle of the body, and is, therefore, not only capable of maintaining life, but also increasing the frame, so that should a rigorous economy of food ever become necessary, all classes might betake themselves to a milk diet to maintain life. A rapidly increasing population, the high prices of butcher's meat, the destruction of stock in some of the principal dairy counties through the late severe visitation of that most fatal disease the rinderpest, has tended to increase the value of all kinds of dairy produce. The price of all marketable commodities is regulated by supply and demand: in this particular branch the demand has been steadily increasing, whilst the supply has been gradually diminishing: thus both are tending to enhance the price to the consumer. Within the last twenty years rapid strides have been made in the cultivation of the soil, new and improved implements have been introduced, a better rotation of cropping has been substituted; thorough drainage, the use of artificial manures and feeding stuffs have in many instances nearly doubled the produce. The feeding of stock has during the same period likewise become better understood, and is now much more successfully and extensively practised, whilst we think the dairy has barely maintained its place in the race of progress and improvement. The great amount of labour entailed on the female members of the farmer's household in the management of a large dairy, whether the milk is converted into butter or cheese, has caused many farmers to change their system of management, even in localities where dairying could not fail, if properly managed, to produce the most profitable results. But unless the dairy can either be let (as is practised in some dairy counties) to a man who pays the farmer so much per head for the use of his cows, or the farmer's wife or daughters can take an active part in the management, or at least superintend the operations, if left entirely in the hands of servants, who take no interest beyond that of the moment, it will seldom prove remunerative. Some idea may be formed of the magnitude of the demand and inability of this country to meet it under the present circumstances, when we consider that for butter alone imported into the United Kingdom during 1865 we paid the foreigner the handsome sum of £5,945,884, which shows ample room for improving as far as practicable our present manangement, and likewise of extending our dairy establishments wherever the soil and other circumstances will permit.

In considering this subject we purpose to begin with the calf as soon as it is dropped, and trace it through its various stages until the cow finally arrives at the shambles of the butcher. Practical men differ in opinion as to the best and most economical method of weaning calves; it is generally admitted that the young animal thrives best when allowed to suck the cow at pleasure. As this practice cannot be defended on the principle of economy, we may dismiss it without farther comment. With the generality of rent-paying farmers, where every pint of milk is a consideration, those who can wean their calves with the least quantity are considered the most successful. After the first week there is no difficulty in weaning calves without giving them any milk at all, as they may be kept entirely on gruel made of good linseed cake, linseed-meal, or oatmeal, or a mixture of each. Where cheese-making is practised, the whey may be used in making the gruel with good effect; if whey is not procurable, nice sweet hay-tea may be substituted. Sweet food of a proper temperature, which should never exceed that of the body, and given at regular intervals, with plenty of pure air and light, and kept scrupulously clean, are the great secrets of calf-rearing. The calf during its early life is amongst the most tender of our domesticated animals; yet how often do we see them treated with the utmost carelessness and neglect! their food is often sour, or given either too cold or too hot; they are confined in crowded, dark, and ill-ventilated pens, where the manure is suffered to accumulate and ferment, and from whence emanate the most noisome smells and poisonous gases. Where this is the case need we wonder at the young animals becoming suddenly attacked and quickly succumbing to diarrhœa and other intestinal diseases of a kindred nature? The calf-house should be furnished with a small manger to contain their food; from a month to six weeks old they will begin to eat if proper food is placed before them in small quantities—some nice sweet meadow hay cut into fine chaff mixed with meal of some kind, or a mixture of meal and finely ground linseed-cake: the mixture should be slightly damped with water in order to cause the meal the better to adhere to the chaff. For young calves we have found nothing equal to finely ground wheat with one-third part of linseed-meal, or well pulverized linseed-cake; we prefer the latter, as it is not so liable to relax the bowels, and is easier of digestion from its containing a less quantity of oil. During the summer, when the calf has attained a month old, we prefer letting them have the run of a small grass-field near the homestead: the pure air and exercise they get in this way are highly conducive to health. They should be regularly housed at night, and during wet weather; for except when allowed to suck the dam, any undue exposure to wet or cold is very liable at this early age to bring on an attack of disease, even when fairly weaned. The most profitable system for the farmer to pursue is, to give his calves the shelter of a yard or shed every night until they are at least nine or ten months old; to keep them in a state of progression, they should still receive a daily allowance of from 2lbs. to 3lbs. of meal or of good linseed-cake; good keeping wards off many diseases. During the winter months all the yearlings should be housed or kept in clean well-littered yards, at least for the night; where the grass land is dry and sound they may be allowed to run out in the daytime, in fine weather. On dairy farms, as a rule, only cow calves are reared, to keep up the regular stock of milkers. On every farm there is a certain number of cows which from some cause or other require drafting off yearly: these are replaced by home-bred heifers. Of course, the number of calves reared for this purpose will depend on the number of the herd. When they have arrived at a year old, the farmer can form a pretty good idea of which will best suit his purpose; such as are the most promising should be selected for keeping, and all the others sold or disposed of: unless this is done the farm will soon become over-stocked. We will suppose the calves are dropped from the beginning of March to the 1st of May: the young heifers should not be put to the bull until they are at least 26 or 27 months old; they will thus calve at a time when the weather is favourable and a prospect of abundance of keep. Some farmers put their heifers to the bull at from 14 to 15 months old. On dairy farms this is unprofitable management, as it not only produces a puny stunted animal, but as far as the produce of the dairy is concerned will require two such to be equal to an ordinary cow. With high-bred stock, where milk is a secondary consideration, it is considered good management to put the heifer early to the bull; here it is less injurious. As soon as they calve, the heifer can be put dry with extra keeping: the animal suffers little in growth, and by producing a calf at this early age the tendency to lay on an extra amount of fat, so unfavourable to conception, is avoided. All dairy cows, but more particularly the in-calf heifers, should be well sheltered and cared for during the winter. There should be sufficient shed-room to hold all the cows kept on the farm. These should be kept clean and well-ventilated: sanitary improvements are necessary, even amongst the lower animals. It may be said the farm-buildings are a landlord's question. This we fully admit; but the landlords, as a class, are becoming too much alive to their own interests and the interests of their tenants—for they are identical—long to permit the want of suitable buildings to retard agricultural improvement. Sufficient air, exercise, and pure water are conducive to the health of in-calf cows. In fine weather they may daily be turned out into the pastures during the winter, with advantage; if rain sets in, they should at once be removed to the shelter of the yard or cow-stall. Instead of this, how often do we see them standing behind some gate, with arched backs, staring coats, and empty bellies, and possibly knee-deep in mud! With this management, is it fair to expect an average amount of produce during the summer? On most dairy-farms the ploughed land is very limited; yet we often see the small quantity of wheat-straw grown, sold off the farm to the highest bidder, instead of being used as litter for the farmer's own stock, and as a means of increasing the quantity of manure. In few dairy countries is there sufficient attention paid to improving the breed of the cows. In many places we find a mixture of various breeds—in fact, it would be difficult to tell what the breed was. This mixture of various materials often produces an animal of inferior value, either for the dairyman or the grazier. An unthrifty mongrel costs as much to keep as a well-bred cow; yet there is not unfrequently a great difference in the value of the produce, and when they come to be fed off for the butcher, the well-bred animal still farther maintains its superiority. All practical men who are at all acquainted with the dairy countries are agreed that there is still ample room for improving the general stock of cows. This is quite within the reach of the farmer, and could be effected at a small outlay; and if properly and judiciously carried out, would not fail to be a source of profit to the occupiers of the soil: a better class of cows for the dairy might be bred, the draft or barren cows would command an enhanced price, and would be more sought after by the graziers, whilst the in-calvers would find a ready market at high prices to supply the large dairies of London and other populous towns. The first step to be taken in improving the stock is by the use of better-bred bulls. There are plenty of well-bred young bulls, of from six to ten months old, which may be purchased for 10 to 20 guineas. This to some may appear a large sum. If once they try the experiment, we feel sure they will continue, and every time they change their bull they will be anxious to secure a better-bred one. We find it is a common practice with dairy-farmers to allow the bull to run with the cows during the summer. For several reasons this practice is objectionable. First, there is the danger to persons passing through the fields where a bull is at liberty, and with anything above two years old the danger is considerable, as after that age they cannot be trusted. Again, where the bull is allowed to range with the cows the farmer seldom knows when any particular cow's time is up for calving; all that he knows, as the time approaches, is that the cow springs in her bay, and shows other symptoms of parturition; but whether she should calve the beginning of the month or the latter end is quite a matter of conjecture to him. Cows vary so much that even the most practised are sometimes deceived, hence we often find a calf sacrificed, and often even the life of the cow is endangered, by calving unexpectedly. Where a valuable herd is kept things are never left to this chapter-of-accident method of proceeding. The bulls are kept up, and a correct register, with name, number, or description of each cow, and the date of bulling. This plan should be introduced on every farm. It entails but little extra trouble, as the cows are seen at least twice a day, that is at milking-times. Any cow that is then in season should be taken to the bull, and after being served, should be tied up for at least the next twelve hours. Where this is neglected great injury and loss frequently ensue. Abortion is often caused by the in-calvers becoming strained in leaping cows that are in season. Keeping the bull shut up at all times entails a little labour and attention on the part of the farmer, but is amply repaid the avoidance of a greater amount of disturbance amongst his cows. Both the quantity and quality of the milk is easily depreciated if the cows are overheated during the day, from racing, gadding, or driving them long distances to and from milking. The kind and quality of food on which they are kept produces a marked effect on both the quantity and quality of the produce. Young grass or sloppy food, boiled turnips, brewers' grains, or any food containing much water, tend to increase the quantity; whilst for butter, bruised oats, linseed-cake, or maize are the best feeding-stuffs; for the production of cheese, bean or pea-meal or lentils are the most suitable food for increasing the quantity. So well is this understood amongst the farmers and dairy-managers in some counties, particularly where the cows are let to a bower, or person who rents them of the farmer at so much per head for the year, that a fixed quantity of bean-meal for each cow is stipulated in the agreement, the price rising or falling with the allowance. Boiled food is better for dairy-cows than raw; being more easily digested and easier assimilated, there is less demand on the organs of digestion. The average produce of a dairy-cow is variously estimated, and, as before stated, depends both on the animal and the system of feeding. Most dairy-farmers agree that cows after their second or third calf are the most profitable, both as to quantity and quality; hence the utility of keeping a regular supply of young stock, to replace those drafted off yearly. The younger the cows are drafted, the more valuable they are for the purpose of feeding. As a general rule, stock bred on a farm are more healthy than those brought from a distance. A good milker will give a yield of from 500 to 550 gallons of milk a-year. During the early part of the season one gallon of milk will produce a pound of cheese; when the cow becomes again in-calf the quality of the milk begins to deteriorate, and gradually becomes poorer as the period of gestation advances; hence, from 3¼ to 4 cwt. per cow is a good average. Dairy-farming is most profitably practised where land is under a mixed system of husbandry, where roots and straw can be grown for the use of the stock. No fixed rule can be laid down for the number of cows that can be kept on a given number of acres; the quality of the land and the management of the stock will always be the best guide. On ordinary land, with one-fourth part under cultivation, about twenty-five milking-cows, and a sufficient number of young stock to keep up the herd, and horses to work the land, may be kept per hundred acres.

G. MURRAY.

Elvaston Castle, Derby.

DISINFECTION AND DISINFECTANTS.

In the matter of disinfection, as in certain other applications of science to useful ends, England, with the exception of Bristol, has fallen a little behind the advance of continental practice. Ten years ago, certainly, it would have been as difficult to find a comprehensive account in our own language of the agents for purifying our air, water, houses, and messuages, as it would have been to discover in the same tongue a detailed description of the needle-gun. We are at last busily engaged, we are thankful to say, in rolling away from ourselves this latter reproach; and in this article we shall make it our business to show how we are now beginning to make up our deficiencies in a branch of the arts to which we may, perhaps with some justice, think foreigners have more need to pay attention than ourselves.

A Minute of Information on Disinfection and Deodorisation was prepared for the General Board of Health by Mr. Lyndsey Blyth in 1857. In the year 1863 Professor Hoffmann, in his Report on the "Chemical Products and Processes," illustrated in the International Exhibition of the preceding year, covered four closely-printed and double-columned pages—104-108—of that handsome octavo, with a most valuable memorandum on this subject. The Crimean War may be supposed to have called forth Mr. Blyth's memorandum; and the American War evoked a similarly excellent pronunciamento on the same subject from a Dr. Elisha Harris, which was published separately in the first instance, and may now be consulted as one in a volume of seventeen essays on military medicine, edited by Dr. Hammond, lately Surgeon-General to the United States Army.

It is superfluous to say that on this, as on all other matters of practical hygiene, Dr. Parkes' "Manual," which has just reached its second edition, is of the very highest authority. Within the last few weeks very considerable accessions have been made to our knowledge of the agencies in question by the contributions of Dr. Angus Smith and of Mr. Crookes to the "Third Report of the Cattle Plague Commissioners." The views, and the actual and most successful carrying out of those views into practice, which England owes to Dr. Budd, and Germany to Professor Pettenkofer, may be studied so far as England is concerned in a threepenny pamphlet by Dr. Budd, and so far as Germany is concerned, in a shilling tract, "Cholera Regulativ," published at Munich. And finally, and, as we imagine, most recently of all, the Privy Council Office have put out what we may consider as an improved and abridged edition on a single sheet of Mr. Blyth's memorandum of 1857. We do not propose here and now to weigh the merits of these several memoirs one against the other. We can assure our readers that from any one of them sufficient and reliable information, direction, and advice, may be obtained by any one who will consult them; and in what follows we shall cull from each and all, indifferently and without acknowledgment, whatever we may consider good and wholesome doctrine, and necessary for these times.

We will begin by defining the field of operation of disinfecting agencies; in other words, by specifying the objects and places to which and in which disinfectants are applicable. Secondly, we will give a very short explanation of the theory of the operation of these agents. And, finally, we will give certain hints and advice as to the actual enjoyment of them as preventives of disease.

The earth we stand upon, the water we drink, and the air we breathe, may, one and all of them, need for themselves the disinfection and purification which, when rightly employed, can themselves confer. Fire is the only one of the four elements of the ancient philosophers which always purifies and never itself needs to be purified. It is, however, to the porous walls and woodwork of our houses and outhouses, to our clothes and carpets, and to our various apparatuses and contrivances for storing up and hurrying away human and animal *rejectamenta* and *excreta*, that the operation of disinfectants is mainly directed. Earth, if not unfairly overloaded, will disinfect itself; vegetable life and the inorganic forces of the winds and elasticity will keep the atmospheric ocean pure outside and around our houses and towns, so that it only remains for us to admit its currents without stint within our walls by free ventilation; and with reference to drinking water, it must be keep free from any and all contact with defilement, so far as we have anything to do with it, for, in the words of the Thames Commissioners, "as applied to sewage, disinfectants do not disinfect, and filter beds do not filter." And practically, therefore, it comes to this—that it is within the precincts of our dwellings and of their immediate surroundings that disinfection finds its sphere of operation. Now, as by employing disinfectants thus and there we aim at preventing the propagation, diffusion, and origination of diseases, it is necessary for us as rational beings to have some *rationale* or explanation of the ways in which this origination, diffusion, and propagation of disease may take place. And science says that the diseases which we can control by processes of disinfection are diseases which depend for their origination upon some special "poison," germ (it may be), or ferment, and for their diffusion and spread upon the existence of a particular atmosphere, medium, or *nidus*, to breathe, feed, and multiply in. Consumption and cancer are not so conditioned, and we cannot control them by disinfection. Cholera, however, typhus, and the cattle plague, are dependent upon these conditions, and control them we can to no inconsiderable extent. Our line of defence is obviously two-fold, as we direct our exertions to the destruction and stamping out of the special poison-germ or virus, or to the abolition and destruction of the atmosphere and pabulum on which it feeds.

The special germs or ferment, whence the special diseases cholera, typhus, and the cattle plague respectively spring, can unhappily be wafted and carried on the wings of the wind; and if we are to meet and destroy them there, we must provide ourselves with some disinfectant which can be, like them, airborne and volatile, even if not necessarily aëriform. The doing of this is obviously a very large undertaking, one indeed which is cubically commensurate with the cubical measure of the air into relation with which we or our cattle can come. And at first sight it would seem as though any atmosphere which was not too strongly charged with disinfectants for us or our cattle to breathe would be *ex hypothesi* too weakly charged with them to meet and slay these specific disease embryos. For considering what an infinitesimal "point" of vaccine or smallpox "matter" is sufficient to produce vaccination or inoculation, and all their consequences, we are tempted to think that dilution against dilution, a diluted aërial poison would have a better chance for a victory in an atmospheric battle than a diluted gaseous disinfectant. But as a matter of fact, and in spite of the discouraging considerations which pathology on the one side and mensuration on the other suggest to us, it has, happily, been shown that the judicious disposition, or rather exposition, of carbolic acid to evaporate on cloths and pieces of carpet inside the stalls, as well as upon the horns and legs of the cattle, furnishes a very complete protection against the specific air-borne infection of the rinderpest. And it is well known that the specific germs of cholera and typhus are in greater need of being concentrated, and are consequently rendered less dangerous by mere unassisted dilution and ventilation, than is the pestilence which falls on our flocks and herds.

Our operations on our second line of defence are even more sure and rational. *Poisons*, in the medical as opposed to the pharmaceutical sense of the words—poisons, that is, such as that of the rinderpest as opposed to that of *nux romica*, if they are to multiply their own life and destroy ours, require a certain set of "favouring conditions." These "favouring conditions" happen to be furnished and constituted by the decomposition of organic matters; and as such matters in decomposing give off certain exhalations, these favouring conditions may be spoken of as a favouring *atmosphere*. Now, it is within our power, by acting upon decomposing organic matters, either whilst still solid or whilst in solution, to prevent them from giving off any exhalations at all, and thus to prevent the very formation of that atmosphere which is the breath and life of the special poison. The Genius was powerless for mischief as long as he was within the copper vessel; the fisherman was at his mercy when he was set free into space by the removal of the leaden cover. Or, to change the metaphor borrowed from the *Arabian Nights* into one furnished us by these September days, it is more philosophical, and certainly more economical, though it may be less sportsmanlike, to crush the egg than to wait to shoot the bird on the wing. The way in which these favouring atmospheres or media are generated resembles, to our apprehension, the ways in which certain other media or atmospheres, and specially those set free in processes of fermentation, are generated; and, as a matter of fact and in practice, agencies which check the one are found to check the other set of processes also. This explanation or *rationale* of the operation of disinfectants has been arrived at partly by the interpretation of the success which was found to attend certain processes discovered empirically under the pressure of prescientific man's necessities, and partly by the verification of certain theoretical views to which the eyes of modern science have gradually opened after long gazing through somewhat narrow casements.

Coming now to the practical recommendations which a diligent perusal of the several memoranda we have specified, coupled with some practical acquaintance with the employment of disinfectants, emboldens us to make, we will speak of carbolic acid first, as it is just now the most fashionable as it is always likely to remain one of the most useful of disinfectants. Carbolic acid does seem to have proved itself to be of the very first utility and efficiency in checking the cattle plague, as it protected whole herds to which it was applied against the infection, which depopulated contiguous farms at the same time, and afterwards destroyed these very herds when the application of the disinfectant to them was discontinued. This seems to be sufficient evidence to induce all owners of horned or other cattle to employ it, and we may add that its efficacy in arresting fermentative change can be testified to very feelingly by any brewer into whose water supply the refuse of a gas manufactory may have soaked itself. Its presence is certainly competent to arrest the processes of ordinary fermentation, but we should add that there seems to be some doubt as to whether it finally destroys, or merely temporarily suspends the vital powers of the fungoid organisms which are necessary to the carrying on of those processes. It may be purchased from the manufacturing chemist, who is by no means, it should be remembered, the same thing as a wholesale chemist, at the very moderate rate of 1s. 3d. per gallon for large, and 1s. 6d. for small quantities. It is not very easily mixed with water, requiring for this purpose a good deal of beating and shaking up with, according to various authorities, quantities of water exceeding its own volume in the various proportions of from twenty to even one hundred to one. There are many cases in which it will be well to sprinkle it, without diluting it, all over such floors or other porous and defiled structures as we can afford to impregnate with so strong a scent; or it may be allowed to diffuse its undiluted self through the perforated lid of a box. Acting thus indifferently and simultaneously by evaporation and in solution, pure or diluted, it can be poured into masses of sewage, or thrown over heaps of filth, or be left to diffuse itself into the air, at its own pungent will, from cloths, mats, or pieces of carpet soaked in it. We are inclined, for several reasons, to think its employment more suitable for cattle than for human epidemics, where, however, it still has a place and power, and, in the proportion of a teaspoonful to a couple of wineglassfuls of water, may, in times of epidemics, serve as the daily ration per head of disinfectant. But, under such circumstances, the sewers in connection with the house-drains which are to be thus dieted should have been previously acidified by the metallic salts of which we shall proceed to speak in the second place, though we incline to think they merit the very first in our enumeration. The salts to which we refer are two iron salts, the sulphate and the chloride. Their especial scientific claims are their power of debarring sewage from running into that alkalinity which it so much loves, and in which cholera revels; secondly, their deadly enmity to the lower forms of animal and vegetable life, infusoria, confervoids, and such like; and thirdly, the power which they have recently been proved to possess of arresting the spread of cholera, and which they may be supposed to possess in the case of other and less deadly diseases. We will speak on each of these three points separately. The acid and the base which make up the iron salt part company readily when it is cast into sewage: the acid neutralises and masters the ammoniacal salts which give wings to, even if they do not constitute, miasma; and the base—the precipitated oxide—acts persistently on the organic matters with which it is surrounded, by perpetually transferring to them the purifying oxygen with which it as perpetually re-charges itself. This operation of the oxide of iron is illustrated by, and even in some degree identical with, its operation in the ordinary process for the purification of coal-gas. Of the enmity of the salts of iron to the lower forms of organic life, the paucity of organic remains in the strata reddened with the oxide of iron, in the old and new red sandstone formations, speak very strikingly; and an experiment on a modern vegetable with an excess of either of the salts we have mentioned will show, as is well enough known, that in this, as in other matters, the "thing which hath been is the thing which shall be." And if water containing those minute forms of life which are so abundant in miasmatic media be mixed under the micriscope with a solution of these salts, the same deadly effect will be seen to be produced upon them which Mr. Crookes and Dr. Angus Smith believe, though Pettenkofer doubts, to be produced by carbolic acid. Thirdly, as a matter of fact, the disinfection of barracks, prisons, hospitals, and even of entire towns, with these salts, or rather with one of them, the sulphate, has been found to be followed in Germany by the arrest of the spreading of cholera. And we may add that the same process is being actually kept in operation at the present moment in the English towns of Bristol, Manchester, and Oxford. The chloride would be preferable to the sulphate of iron, were it not for its tendency to deliquesce, which makes its conveyance into all the out-of-the-way places which stand in need of it a matter of some little inconvenience. The waste chloride of manganese from the chlorine manufactories, when neutralised with iron, disinfects Manchester most economically, but the trouble and cost of carriage render this chemically excellent fluid practically unavailable except in towns blessed or plagued with chlorine manufactories. We learn, however, from Dr. Parkes' book, that it is possible to sell a yellowish not very deliquescent substance containing as much as 26 per cent. of perchloride of iron for as little as £2 7s. ton. Still we are inclined to think that trouble and expense would in the long run be saved by the employment of the sulphate, the "green copperas" of commerce, which is manufactured in large quantities for the making of dyes and of writing ink, and is procurable, therefore, at a moment's notice, and in any desirable quantities. It has, for many years, been a staple disinfectant in Germany, and is now Pettenkofer's favourite agent. It was used by the French army surgeons in the Crimea for the disinfection of the ground as well as of "soil" in its secondary sense. A square metre (about 1521 sq. in.) was disinfected by about three quarts of a solution of this salt in fifteen times its weight in water. Being non-deliquescent this salt needs to be dissolved in water to be operative at all; it will dissolve in twice its own weight of water, but a solution of a pound to the gallon will be found as efficacious as easily remembered by the workmen who carry out the process. Cisterns which supply places which need disinfecting, and do not supply, as such cisterns should not, any tap besides, may have copperas added, in this proportion to the water they they contain, and, as it does not act injuriously on metal piping, mortar, or cement, this may be done with safety and great saving of trouble. For places which have no water supply of their own, a solution of this salt—in warm and soft water by preference—should be employed of the strength specified. Every cubic foot of the solid contents of such places needs ⅜ of a pound of copperas for its acidification in the first instance when an epidemic is impending. And every place devoted to the purpose in question, whether it be supplied with water or not, and whether it be offensive or not, should at such seasons be kept constantly disinfected at the rate of ⅜ of an ounce per head per diem. Green copperas is sold at the rate of 60s. per ton, or 3s. per cwt.

On chloride of lime neither Mr. Crookes, in the "Cattle Plague Report," nor Professor Pettenkofer and his colleagues in their "Cholera Regulations," look with much favour. It is very easily adulterated, it is an irritating substance itself, and causes the formation of other substances more irritating still; it impairs the value of manures and makes mortared walls damp and deliquescent, according to Mr. Crookes. According o the German authorities it is dear, and when employed in force disagreeable; and, above all, it is alkaline and a favouring therefore rather than a disfavouring chemical to choleraic fermentation. There is no positive evidence, according to Pettenkofer, of its possessing any special power as a disinfectant; though as a deodoriser, we must say it is perhaps the most speedy and efficient we possess. But deodorisation is one thing, and disinfection is another. Though bad smells are ordinarily to be smelt where poison is to be breathed, this is not always the case; and where it is, the destruction of the one is no more necessarily the destruction of the other than the destruction of a monitor-lizard is the destruction of the crocodile whose presence it warns us of. For the disinfection of clothing, for which purpose the chlorides of lime and of soda are usually recommended, we should recommend the employment of Burnett's and of Crewe's solutions of chloride and of sulphate of zinc. They leave no stains of rust behind them, and herein excel the salts of iron, which they resemble in the important point of being acidifiers, though they differ from them, we believe, a little disadvantageously in the matter of price. Clothes may be disinfected by simply exposing them to sufficient heat—to a boiling temperature, that is—for a sufficient time.

The oldest of disinfectants, sulphurous acid, the product of burning brimstone, the "*sulphura cum tædis*" of the Roman augurs, is perhaps as good as any volatile disinfectant of more recent invention. It will search out foul crannies and crevices in stalls and stables, in pig and in man styes. The Germans recommend its use in solution in water for the disinfection of clothes; there is a little risk in injury to colour from such an agent; but where colour is "no object," as also in the other cases we have mentioned, sulphurous acid may be elegantly and readily obtained by acting on sulphite of soda, which is largely used in the arts, and known as "antichlore," with any fitting acid. The refuse liquor from such a process would itself be a disinfectant, being charged with the familiarly-known and unjustly-neglected antiseptic, common salt.

Being ourselves determined never knowingly to drink water which can by any possibility have been tainted by sewage, howsoever it may have been filtered, irrigated, or disinfected, and wishing that all mankind were like-minded with ourselves, we have nothing to say, from the disease-prevention point of view, as to the employment of alum, lime, and iron salts on the large scale. When all the world has taken, as we believe it shortly will, this our pledge of total abstinence, these processes will fall into disuse; and more time, attention, and money will be spent on what is even now of greater importance—viz., the disinfection of the house-drain and the homestead.

Of the various absorbent and so far deodorisant substances, such as charcoal, sand, ashes, and porous clay, we have little to say as to the control of epidemics, except that the very greatest care must be taken to prevent disproportion being established between their porosity, which is their main or exclusive agency for disinfecting, and the quantity of matter which they are expected thus to disinfect. This quantity only too frequently is out of all proportion to their area of pores; it would be amusingly so if the matter were not a grave one, when the overcrowded household of the poor man is told to disinfect its inadequate conveniences with the scanty supply of ashes which comes from their coals, bought by the hundred. The kitchen fire of the alderman may well produce more ashes in twenty-four hours than many a blind alley in Spitalfields does from all its grates taken together for a week; and yet Mr. Bumble avers that there is no earthly reason why the ash-pits and back yards of his tenants need be more offensive than those of his own suburban villa. Air, which should at all times, except those of fumigation, be freely admitted to such places as need disinfection at any time, should be most specially sent through them after they have been subjected to the disinfecting process.—*Standard.*

GYPSUM IN STABLES.—The *Germantown Telegraph* says: "Gypsum should be sprinkled daily over the floors and tie-ups to absorb the ammonia of the urine. The strong odour observable on entering the stable on a morning, arises from the presence of ammonia, one of the most valuable products of stable manure, when properly economised. Gypsum or lime, either slacked or caustic, should also be sprinkled over the bottoms of cellars in the spring. This will tend to purify the atmosphere, and prevent many deleterious effects resulting from the presence of miasma. After a few days it should be removed, and a fresh supply substituted in its place."

IRISH AGRICULTURAL STATISTICS, IN 1866.

The Registrar-General has forwarded us the usual annual statement of the crops in Ireland. From it we learn that—

	Acres.
The total acreage under all crops this year was ...	5,519,678
The do. do. in 1865 was (revised numbers)	5,648,403
Showing a decrease in the extent under crops in 1866 of	128,725

The crops which diminished in area this year are—

	Acres.	Acres.
Oats	47,580	
Barley	26,564	
Bere and rye	99	
Beans and peas	2,118	
Potatoes	15,841	
Turnips	17,091	
Meadow and clover	77,998	
		187,291

The crops which increased in acreage in 1866 are—

Wheat	33,485	
Mangel and beet	5,740	
Cabbage	2,824	
Carrots, parsnips, and other green crops	2,661	
Vetches and rape	1,630	
Flax	12,226	
		58,566
Making a net decrease in the area under all crops of		128,725

Although the foregoing statement shows a decrease of 128,725 acres in the total extent under crops in 1866, there ras an increase in the extent under "grass" to the amount of 210,425 acres, and a diminution in the area under "bog and vaste unoccupied" of 86,664 acres. Woods and plantations ilso show an increase this year, and fallow a decrease.

The following abstracts exhibit the acreage under each crop n 1865 and 1866, and the increase or decrease in the latter rear:—

Abstract of Cereal Crops.

	1865. Acres.	1866. Acres.	Incrse. in 1866. Acres.	Decrse. in 1866. Acres.
Vheat	266,989	300,474	33,485	—
lats	1,745,228	1,697,648	—	47,580
larley	177,102	150,538	—	26,564
lere and rye	10,091	9,992	—	99
leans and peas ...	16,899	14,781	—	2,118
Total	2,216,309	2,173,433	33,485	76,361
Decrease in cereal crops in 1866				42,876

Abstract of Green Crops.

otatoes	1,066,260	1,050,419	—	15,841
urnips	334,212	317,121	—	17,091
langel wurtzel and beetroot	14,478	20,218	5,740	—
abbage	33,622	36,446	2,824	—
arrots, parsnips, and other green crops...	24,130	26,791	2,661	—
etches and rape ...	29,466	31,096	1,630	—
Total	1,502,168	1,482,091	12,855	32,932
Decrease in green crops in 1866				20,077

General Summary.

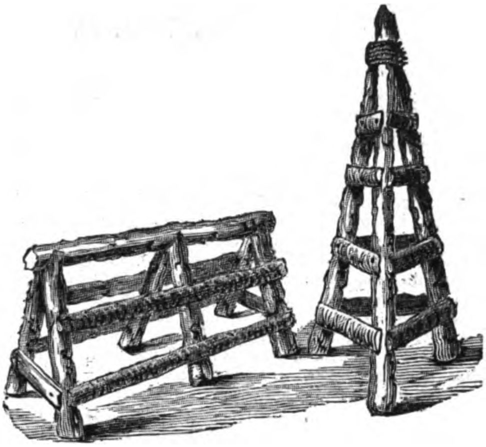
ecrease in cereal crops	in 1866	42,876	
Do. green crops	in do.	20,077	
Do. meadow and clover	in do.	77,998	
			140,951
crease in flax	in do.		12,226
Total decrease in the extent of land under crops in 1866			128,725

Returns of Live Stock.

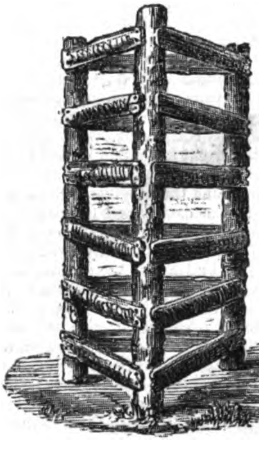
The returns of live stock for 1866 compared with 1865 iow an increase in the number of cattle of 245,384; of ieep, 575,671; and of pigs, 187,570; and a decrease in orses of 12,708.

The total estimated value of horses, cattle, sheep, and pigs iis year, is £35,178,040, being an increase of £2,361,033 mpared with 1865.

THE WAY TO VENTILATE CORN STACKS.



This ventilator is constructed of light poles, eight feet in length. The thinnings of a larch plantation will answer, placed in a triangular form, as represented. The three poles are either tied together at the top, or have a wooden pin passed through them. When put in their proper position the lower ends of the poles will be three feet apart from each other. Where the corn stack is built on a frame elevated on pillars, this is placed in the centre, and the air enters from underneath; but where the stack is built on the ground it is necessary to have a small trestle two feet high (as given above), and long enough to reach to the outside of the stack, for the purpose of making an opening for admitting the air. No ventilator is required at the top, as the air passes out readily enough through the upper part of the stack. Sometimes two trestles are used, one on each side, in order to secure perfect ventilation.



This is another form. In this the upright poles are equidistant at top and bottom. This can be used both with stacks built on frames, or with such as are built on the ground, and trestles are also necessary in the latter case. Either form, when placed on frames elevated above the ground, should be attached to the frame by nailing one end of a stay to each leg and the other to the frame.

THE HARVEST OF EVERY YEAR;

OR,

PLAIN HINTS TO FARMERS ABOUT THE WEATHER.

VII. THE INFLUENCE OF TREES ON CLIMATE, WATER SUPPLY, AND RAINFALL.

The question of the influence of woods and forests in a country is equally interesting in the scientific and political point of view. Science is interested in them as important physical agents in creation; and political economy must take them into consideration if, as seems certain, trees in a country are in general absolutely necessary to secure its fertility—to enable us to count upon average, if not superabundant, harvests for our increasing populations. In fact, it would seem that if we wish to increase the annual yield of wheat *we must plant more trees* throughout the country. Such is the positive upshot of the argument which we shall proceed to discuss.

In France a very considerable destruction of forests had taken place for a very long time, with the object of giving to tillage the land occupied by woods; but of late years the inundations which have devastated great extents of the country have compelled the Government to make a vigorous attempt to restore the forests on a great scale.

A vast deal has been said and written on the influence of trees in the general economy of Nature, without elucidating the subject by reasoning founded on clear and precise experience; and therefore we must be thankful to anyone who can furnish us with such downright facts as may enable us to draw our own conclusions.

The question comes home to us in England in connection with our decreasing rainfall and deficiency of water, complained of almost on all sides, and so perhaps it may be useful to give an account of the researches and conclusions of a French author, M. Becquerel, who has recently devoted his attention to it, and endeavoured to come to right conclusions on the subject.

The subject is two-fold: in the first place it relates to the social importance of forests, and secondly to the influence which they exert on the temperature and the humidity of the soil and the atmosphere, both of the latter being vital agricultural considerations.

The history of all nations reveals the causes and the effects of cutting down the woods and forests of countries. At first it was the increase of population which necessitated the measure progressively; but the great devastations only go back to the epoch when mighty conquerors, with the view of subjecting newly-formed nations, cut down and burned the forests which served as a refuge to the inhabitants. Therefore, the increase of populations, wars, and the progress of civilization have been the chief causes of the destruction of forests. The banks of the Euphrates, the Ganges, and the shores of the Mediterranean now present to the traveller only deserts and marshes, in which we scarcely find a trace of the exuberant tillage of past ages. From the time of Sesostris—far back in the ancient history of Egypt—to that of Mahomed II., in the 15th century of the present era, Asia Minor was the theatre of devastating wars, which destroyed the forests; and the water-courses dried up. The Land of Canaan, which the Bible cites as the most fertile in the universe, is, at the present day, deprived of both vegetation and water, because her forests were destroyed. The beautiful forests, which formerly vivified the sea-board of Africa, are now at least one hundred and twenty miles distant from the shores of the ocean.

In the early history of France, we find that Julius Cæsar, in order to penetrate into Gaul, had to play sad havoc continually with the woods and forests. There, as all over Europe, wars and the progress of civilization have transformed vast extents of country into barren swamps, wastes, or regions of everlasting heath.

Contrary to the general assumption, it appears that these vast regions covered with forests did not render the climate so rude as is supposed to be the consequence of their existence, for Cæsar himself tells us that the territories in question were amongst the most fertile in the country.

The cutting down of the forests of France continued ever after, and in the 9th century the incursions of the Normans vastly contributed to the abandonment of tillage, and originated the wide wastes or "lands" of Brittany and the deserts of Champagne and Poitou, which occupy the sites of the ancient forests.

From the time of Charlemagne many royal edicts were directed against this blind destruction of forests; but all such preservative measures left a great latitude for evasive interpretations, and the cutting down of forests has continued with deplorable facility. At length, in 1859, more rigorous measures were taken. The law now permits the cutting down of forests to an extent above 25 acres, only on the following conditions: The land on mountains and slopes must be maintained; the soil must be protected from inundations; the springs must be preserved; the downs must be preserved, and other precautions must be taken with reference to the public health. These restrictions would be sufficient if it were always easy to enforce them.

During the last sixteen years the extent of forests cut down in France has been at the rate of about 75,000 acres per annum. Against this there has been a re-planting of forests to the mean extent of about 25,000 acres per annum, the difference being 50,000 acres. The result is, that in the space of one century the French have lost *five millions* of acres: that is, nearly one-fourth of the wooded surface of France, which is at present about 22½ millions of acres. Such is the state of matters in France, and that too, in the face of the fact that France by no means needs such an increase of arable land, since the production of wheat there already exceeds the requirements of consumption.

Now, this clearing out of forests in France concerns us here in England more than we are apt to imagine, if, as seems certain, the existence of forests is directly connected with the *production of rain*; therefore, any interference with Nature in this respect, as in all others, must sooner or later tell on her neighbours. We owe much moisture to our S. and S.E. winds, from their decomposition by the prevalent N.W. and W. and S.W. winds, in summer. Well, the vapour brought to us by S. and S.E. winds must have been generated in countries lying to the south and south-east of our island. It is therefore probable that in the extensive valleys watered by the Meuse, the Moselle, and the Rhine, if not from the more distant Elbe, the Oder, and the Weser, the water rises, in the midst of sunshine, which is soon afterwards to form *our* clouds, and pour down in *our* thunder-showers. And England, in all probability, does the same office for Ireland, and the eastern for the western counties of south Britain. Any interference with Nature is, in its effect, much like that of a pebble flung on the still surface of a lake, when the consequent circles go on for ever enlarging—Heaven only knows how far. Any disturbance in the rainfall of one country must necessarily react on that of its neighbour. On the other hand, drought and sunshine in one part of Europe may be as necessary for the production of a wet season in another, as it is found to be on the great scale of the continents of Africa and South America, where the plains during one-half of the year are burnt up, to feed the springs of the mountains, which, in their turn, contribute to inundate the fertile valleys, and prepare them for a luxuriant vegetation.

It may be a strange question to ask if it is in any degree within the power of man to alter the weather; but, as Sir J. Herschel observes, it is by no means so absurd as it appears. The total rainfall and—which is, perhaps, as regards weather and climate, of even more importance—the *frequency* of showers on an extensive well-wooded tract, or one entirely vered by forests, ought, on every theoretical view of the ases which determine rain, to be greater than on the same ct denuded of trees. The foliage of trees defends the soil neath and around them from the sun's direct rays, and dis- ses their heat in the air, to be carried away by winds, and s prevents the ground from becoming heated in the sum- r: while, on the other hand, a heated surface-soil re-acts by radiation on the clouds as they pass over it, and thus pre- ts many a refreshing shower, which they would otherwise posit, or disperses them altogether.

But this is not the only way in which man alters the weather. admirable agricultural improvement, drainage, from ing been unwisely carried out, has, so to speak, done as ch harm as good to England's broad acres. By carrying y rapidly the surface-water down to the rivulet, and so ying it away to the ocean, drainage not only cuts off a deal of the supply of local evaporation—which is a rial element in the amount of rainfall—but, by causing surface to dry more rapidly under the sun's influence, it s it also to become more heated, and so to conspire with ction of the denudation of trees to *prevent rain*.

idence is at hand to corroborate this theoretical view of atter. The rainfall over large regions of North America id to be gradually diminishing, and the climate otherwise ing, in consequence of the clearance of the forests; whilst, e other hand, we have the very remarkable fact that under beneficent influence of a largely-increased cultivation he palm-tree in Egypt, rain is annually becoming more ent. Again, there are lakes in what was formerly Spanish ica—that of Nicaragua, if we mistake not—whose water y (derived, of course, from atmospheric sources) had be- so diminished, owing to the denudation of the country the Spanish *régime*, as to contract their area, and leave tracts of their shores dry; but now, since the trees have e restored, are once more covered by their waters. Even r own southern counties complaints are beginning to be of a diminution of water-supply—partly owing to lly-decreasing rainfall, from the universal clearance ber, although chiefly, perhaps, attributable to robbing prings of their supply by draining—a practice no doubt cial to agriculture if used with caution and in moderation, of which the consequences if carried to excess may ere long verely felt, in rendering large tracts of country uninhabit- in summer from mere want of water. Our outfalls are y day becoming more direct and rapid in their action. , which used to drag sluggishly downwards through mean- g streams, runs straight out to sea. Floods, rather as the t of this arterial drainage than as the effect of parallel l drainage, follow excessive rainfalls more immediately they used; and, unexpected as it may be, the influence of ultural drainage becomes apparent on our springs, our -streams, and our rivers. It is of great importance that an iry be made into this subject, in order that the truth of the er may be known before the owners of estates shall have anently injured their own interests by a too narrow con- ent of their views to the mere agricultural object of land- age. And still more is it necessary that the owners of may not have permanently injured the general interests of island and its population before Government shall have any opportunity of interference. Lastly, several discussions ve been held on the well-supply in and around London, ring which it has been elicited that a serious and progressive sion of water-level has been taking place for a period of ny years. Such have been the consequences of denudation excessive or injudicious drainage—the latter being a rect waste of precious water, the former a prevention of the tural supply designed by Providence.

The destruction of forests and trees in general exerts various uences on the climate of a country. This influence depends on their extent, the height of the trees, and their nature— eir power of evaporation by their leaves, the faculty which y possess of getting warmed or becoming cooled by the air; tly, on the nature and physical condition of the *soil and bsoil*. On the other hand, trees influence running waters d springs.

As a shelter from low winds the utility of woods is evident: is proportional to the height of the trees. The evaporation hich goes on by their leaves is a powerful and incessant se of moisture; the least lowering of the temperature pre- pitates the vapours of the air, the resulting water penetrates into the soil, or is absorbed by the roots. On a soil denuded of trees it runs off, and adds to the bulk of water-courses, often causing inundations.

As to the calorific state of trees, or their capacity for receiving and parting with heat, it has been demonstrated that they get warm and become cool in the air, like all inorganised bodies, by the action of the sun. Being bad conductors of heat, they attain the equilibrium of temperature with the air only after a considerable time. The tree, warmed during an entire day by the sun's rays, gives off the greater part of the heat during the refrigeration of night, and restores by degrees to the surrounding air the heat which it has laid up. These facts have been verified by M. Becquerel by observations with the electric thermometer; and they refute the general assumption that trees tend to lower the temperature. On the contrary, it would appear that they increase it precisely at a time when it is most needed.

The influence of clearing out a country on the mean temperature has been studied by two eminent investigators, Boussingault and Humboldt. The former found, in the equinoctial regions of America, that the abundance of forests and humidity tend to make the climate cooler, whilst the dryness and aridity of the soil keep it warm. Humboldt, on the contrary, declared that in North America the climate has not been altered by the destruction of the forests; but was still of opinion that, in many parts, the clearance of forests would raise the mean temperature. The difference in the results of these two investigators is easily explained if we have due regard to the *nature of the soil*, which is of the utmost importance to the inquiry. M. Becquerel has specially examined the influence of denuded soil on the temperature. He has found that different soils exposed to the sun acquire temperatures varying from 43 to 54 degrees. In their refrigeration by radiation the difference is also very considerable. A silicious or flinty soil cools more slowly than one in which chalk or clay predominates. Now, such being the case, it is evident that a clearance of forests from a flinty soil must raise the mean temperature more than a clearance from other soils, all other conditions being equal.

The effects of clearance on the springs and the quantity of running water in a country are a still more important consideration. Forests contribute to the formation of springs and river-sources, not only by means of the humidity which they produce and the condensation of vapour by refrigeration, but also by reason of the obstacles which they present to the evaporation of the water in the soil itself, and by means of the roots of their trees, which, by dividing the soil like so many perforations, render it more permeable and facilitate infiltration. We have given numerous instances in proof of these averments, and will only add one more. The city of Nueva Valencia, in South America, built in 1555, was then situated about a mile and a-half from a lake; but by the year 1800 it was four miles and a-half distant. In 1822, however, the waters of the lake had a rise, and the lands formerly cultivated were submerged. The explanation is that during twenty-five years the valley, in which the city is situated, had been the theatre of bloody conflicts during the war of independence; the population was decimated, the land had remained uncultivated, and the forests, which increase with such prodigious rapidity in the tropics, had completely taken possession of the country. Such examples prove that by clearing out a fertile country, depending for water only on its springs, we run the risk of drying up the latter to the extent of impoverishing the land. By recent accounts in an American paper, it seems that even the great Mississippi is "drying up" from the same cause, and the time must come when it will no longer be, as its Indian name signifies, "the mother of the waters."

In discussing the great question of the influence of clearing out woods and forests on the water supply of a country, M. Becquerel comes to the following conclusions: 1, Great clearances diminish the quantity of running water in a country; 2, We cannot as yet decide whether this diminution must be ascribed to a less annual quantity of water falling, or a great evaporation of the rain-waters, to both these causes combined, or to a new repartition of the rain-water; 3, The established cultivation of an arid and exposed country dissipates a portion of the running waters; 4, In countries in which no change of cultivation has taken place, the quantity of spring-water seems always the same; 5, Forests, by preserving the spring-waters, economise and regulate their flow; 6, The humidity which prevails in woods, and the intervention of the roots in rendering the soil more permeable, must be taken into consideration; 7, The overflows of water in mountainous countries exert an influence on the watercourses and the springs—in level countries they can only act on the springs.

Such is the various and complex influence of forests and trees in general on the climate of countries. If their clearance does not always entail sterility upon a country, it is injurious by facilitating the invasion of sand on the plains, as in France, where the winds drive the sands freely from the sea-shore, unopposed by the forests. With M. Becquerel, we may conclude that we ameliorate the climate of a country by clearing out heaths, draining and purifying marshy lands, and by planting with woods our mountains, hills, and other suitable localities; but that great clearances of woods and forests are neither necessary nor useful in any point of view whatever.

The fertility of soils is in proportion to their *absorbent power for water*; and therefore, if water be deficient, all "advanced" tillage, the most appropriate manures, &c., will be useless. The conclusion is, that we must reform many of our modern "advanced" notions about drainage, &c., and fall back upon the old methods of Mother Nature, who cannot go on for ever humouring us in our unwise experiments and interference with her rules and regulations.

VIII. THE STORY OF THE EAST WINDS OF MAY AND THE WEATHER OF AUGUST, 1866.

The months of May and August are critical periods to the farmer. The success of the year's labours depends mainly upon a genial May and a kind accommodating August. The former is the turning point of early growth, and the latter is the goal of the year's expectation.

Unquestionably, at the present day, the expectancies of the harvest do not inspire the interest of former times. Time was when, almost from month to month, the changes of the weather influenced the price of grain—raised or lowered the cost of bread. But things are altered now. If the causes of a deficient harvest be as interesting to us now as they ever were, in the consideration of the public weal, it must be admitted that they are no longer of much importance as far as the farmer's material interests are concerned—as far as Great Britain is concerned as a corn-growing country, which should not entirely, if at all, depend upon the foreigner for the supply of bread. A deficient harvest in England alone will never again suffice to raise the price of corn; for, whatever may be the falling off in the crops with us in England, the importation will be such as effectually to keep down prices far below what is required to remunerate the British grower.

Nevertheless, we are still, and probably will long continue, a corn-growing people, and therefore that on which it depends—the *weather*—will always be a primary consideration, especially at the critical periods to which we have alluded, the months of May and August. Even now-a-days, heavy rains will stimulate the trade and cause speculation in Mark-lane. The story of a year's or a month's weather will always be interesting; even should it not serve completely to guide our expectations in the future, it will open to us the consideration of meteorological influences intimately connected with the harvest, and perhaps suggest a useful hint or two to the thoughtful and scientific farmer.

The east winds of last May, and the unsettled weather of August, which has just closed, have been attended with some remarkable circumstances, which we propose to consider with reference to their effects on plants and the public health.

There is a striking regularity in the succession of the winds in the first six months of the year, as established by numerous records, and attested by Luke Howard. The classes of winds run as follows: January, W.—N.; February, S.—W.; March, N.—E.; April, N.—E.; May, S.—W.; June, W.—N. After this, the class W.—N. prevails during the summer, and the class S.—W. through the latter four months of the year. It appears, also, that a wind between north and east is connected with our driest season about the vernal equinox, and a wind between south and west with the wet season following the autumnal. Lastly, there is always a spell of east winds in May, which exert their evil influence on plants and the public health. Their unhealthiness is proved by a greater number of deaths from consumption and brain diseases taking place in May than in any other month. In general, a cold May is not injurious to cereals: it prevents them from getting too rapidly into ear, with a weak stem. "A cold May and windy makes a full barn and findy;" but then the cold must be moderate, and be followed by appropriate weather throughout for a good harvest. No doubt the last was good for the turnips.

During last May, east winds were to west winds in the proportion of 9 to 8½, so that, if we consider only the mean of the month, there was nothing unusual. South-west winds were generally prevalent during the first ten and last six days of the month; but, from the 17th to the 26th, or near London from the 14th to the 27th, there was a spell of continuous and steady easterly winds, and the air was remarkably dry and parching.

It is the *daily range* of temperature that these east winds influence to so pernicious an extent, and this is caused by their *dryness*; for the greater the dryness and clearness of the air, the higher will the temperature rise during the day, and the lower will it fall during the night. Radiation being in either case less impeded, it follows that the daily range of temperature will be great when the air is dry. This principle, and the fact with which it is connected, should be never forgotten, by the gardener at least, who must care for the temperature to which his plants may be exposed during the nights following hot days. The daily range of temperature in the month of May always reaches a higher point than in any other month; but during those twelve days in May last the range far exceeded its usual average. Thus, at Kirkwall, in Orkney, we find that the mean range of May is 9.6 degrees, but during the seven days from the 17th to 26th it averaged 16.6 degrees; at Portree—one of the wettest places in Great Britain—the mean range of May is 13.8 degrees, but last May it amounted to 26 degrees on a mean of the week, and on one day it rose to 34.2 degrees. At Corrimony, in Inverness-shire, the mean was 37.1 degrees, rising on one day to 42 degrees! Other stations also of the Scottish Meteorological Society show an enormous range.

Another remarkable fact must be mentioned. The relatively lowest day-temperatures occurred in the east and south-east, and the farther distant from the sea any place was in the direction of the south-east, the higher was its day-temperature above the average of the place. As suggested by Mr. Buchan, the cause of this difference was probably owing to the circumstance that during this time the general direction of the wind was from the south-east; consequently the air having passed over a great breadth of heated land, had its temperature very much raised before arriving at those places at which there was an excess of day-temperature.

Next, as to *humidity*, or the degree of moisture in the air. We need scarcely state that complete saturation with moisture in the air is represented by 100, or the state in which it can hold no more vapour in suspension. Every month has its average humidity, and the average of May is the least of all; but this average was far lower in last May, and the unusual dryness may be inferred from the following: For the week ending the 26th, the mean humidity at Kirkwall was 62, being 20 less than the average; at Portree 52, or 30 less than the average; at Corrimony 39, or 31 less than the average; and at East Linton 64, or 14 less than the average. In fact, all over the country the humidity ranged or alternated from 50, 60, to 70 during the last few days of the period, when it increased to that figure, indicative of the coming change to westerly unsettled weather, as will be remembered.

The mean temperature of the month was little above 51 degrees, which is 8 degrees lower than that of last year. There was in many places a variation from 40 to 61 degrees, thus making the range of morning temperature 21 degrees. From the 20th to the 26th the nocturnal temperature, under the influence of the cold gusty winds, sank to a few degrees only above the freezing point; hoar frosts covered the ground—for terrestrial evaporation was rapid, but speedily carried off by the stirring wind—vegetation received a severe check, and the tender foliage was crisped by ungenial nights; uneasy feelings were experienced by all persons who are peculiarly susceptible of the evil influences of the east wind, which seems to have been an abomination even to Job himself, if we may judge from the way in which he always alludes to it.

With Mr. Buchan, we incline to believe that east winds depend on differences of atmospheric pressure. During the time the east wind prevailed the atmospheric pressure was high in Great Britain, as is almost invariably the case during east winds; but it is not to the absolute amount of the atmospheric pressure we must look for an explanation so much as to he circumstance that the pressure was greater at places to the orth-east of Great Britain than in Great Britain itself, the ast wind being simply the flowing away of the air from the egion of high to that of low pressure, in obedience to the law y which gases, as well as fluids, seek their own level. In all ases of *high* barometer the wind is observed to whirl out rom the area of high pressure in the direction of the otion of the hands of a watch, being the opposite direction ssumed by the winds when they blow round and in upon an rea of *low* pressure. Of this law, the atmospheric pressure ad winds of each day afford constant illustration; and should e bear it in mind, there will be little difficulty in progosticating coming weather, if, by the aid of the hygrometer, e can reason out its infallible conclusions. On the 21st the rea of high pressure extended through Christiansund, Bergen, russels, and Paris, and the line of equal pressure of 30.60 arved through Shetland, the North of Denmark, Stockholm, nd the west of the distant White Sea.

In England the wind was north-easterly, whilst in Scotland, owever, it was everywhere south-east, but still in accordance ith the *whirling out of the air* from the region of high ressure; for though coming from a southerly direction, it was nly part of the polar current, flowing out of the polar current hich at the time occupied the greater part of Central Europe, om Lapland downwards.

There was, however, another influence at work, besides this gh pressure in the north-east, thus making the east winds ner, more injurious to vegetation, and more disagreeable to ankind.

This influence was the low atmospheric pressure (at least, w as compared with the high-pressure northward) which ntinued to prevail over southern Europe. As more immeately concerning Great Britain, the atmospheric depression the Bay of Biscay was not only stationary from the 18th to e 25th, but became deeper absolutely, as well as relatively, the high-pressures to the north-east of it. The effect of is depression was to cause the winds in the north of France ad the south of England to assume a more truly easterly diection than in Scotland.

Without entering into the extensive meteorological bearings f the subject, it may suffice to say that the cause of this high mospheric pressure and the east winds of May was a long-ntinued low temperature in Russia. From the middle of ebruary till about the end of May, with the exception of the st two weeks of April, the temperature of the north of urope was not merely as low as it usually is at that time of e year, but very much lower, being frequently from 10 to 20 grees below its very low range.

Such was May. We now come to August, which, if we be ot mistaken, invariably *contrasts* in some way or corresponds ith the month of May; at any rate, with respect to our resent investigation, we do not hesitate to state that easterly inds in May are followed by westerly winds in August. We ave gone through the long records of Luke Howard, exending through three-and-twenty years, and find the fact bundantly attested: for instance, in 1814, 1816, 1822, 1824, 1825, 1826, 1828.

Thus seven years out of the twenty-three correspond with he August of the present year; but, indeed, as before stated, he W—N. class of winds prevails in this month, although the oincidence to which we have drawn attention is not on that ccount less remarkable.

As it may be supposed that the weather of August was a ompensation for that of July, we may state that the usual W-S. winds predominated in July as usual, although there was spell of E—N. winds in the latter half, the like of which has ot occurred since July 1793 and 1795; but in *both these ears* there had been a spell of E—N. winds in May.

Moreover, as to the notion of "compensation," we may also tate that in spite of the twenty days' drought, the rainfall of uly was above the average—in some parts 1 inch above the verage. Lastly, there was no "compensation" of rainfall in August, since it was not excessive.

In speaking of the pressure of the atmosphere, Luke Howard makes a remark which has been most strikingly verified uring the month we are considering. The entire passage is orth quoting from his old book, which meteorologists should ead attentively. He says:

"I proposed in the former edition of this work to remove he marks 'fair,' 'changeable,' 'rain,' &c., from the parts of the scale to which they are at present found attached, and place them anew more fitly—with some reference to the *elevation above the sea* at which the barometer is to be used. It is clear that, *at the level of the sea*, the height of 29.80 will more truly represent the *medium*, or the limit of fair and wet weather, than 29.50, at present marked 'changeable.' As a proposition in round numbers, let us suppose a barometer intended for use at from one to two hundred feet *above that level* to be marked 'changeable' at 29.70, and so in proportion, lower for greater heights, up to 600 feet, where this mark would be at 29.30 inches; the others, which are of less consequence, being placed at their proportionate distances above and below it. I say these are of minor consequence, because I believe that in employing this instrument as a weather-glass, it is needful to the success of the observer to attend to it daily, and to watch the approach of the quicksilver to the *true limit of the fair and wet indications*, and its receding from this in ascent or descent—with attention to past as well as present appearances. Fair weather and sunshine may often be found to accompany a low state of the barometer; but they are not in that case to be depended on. *Continued movements in either direction* may be safely taken as indicative of a corresponding duration in the weather they imply; and when the quicksilver in its downward course; has passed the true 'changeable' point, rain (if it have not fallen already) is to be expected *in its rising again above it;* after which the fair weather indicated by that rise is found to obtain.

"The most difficult weather of all for the husbandman, when his labours require a certain degree and continuance of dryness, is that in which the quicksilver makes frequent short movements in ascent and descent, still keeping *about* the point which answers to the limit above mentioned, and which point it is therefore of consequence to settle accurately for him, according to the elevation at which he is placed above the sea."

Now we have not found this passage quoted in any treatise on meteorology; and yet there can be no doubt that it is the grand secret of all weather-wisdom, and worth all the rest by its utility to the practical man—if the instrument-makers would only take Howard's hint, and apply it to a true farmers' barometer.

But, as before stated, it is the application of this grand rule of Luke Howard's to the weather of the late August, to which we would draw attention. Throughout the entire month there has been nothing but a zig-zag ascent and descent to and from the indicated *medium* (29.80); and in every instance the result has corresponded with Howard's description, the rain coming at the "rising again above it," if it had not fallen already, with westerly, north-westerly, or south-westerly winds. Throughout the month, those who prognosticate merely from the appearances of the skies must have been sorely puzzled. For instance, on the evening of the 15th the barometer was at 29.90 in., the wind north-westerly, the sky fair (excepting elevated cirrus clouds), the air warm, the temperature being 62 deg. at 7 p.m., the humidity 62. On the following day the barometer fell to 29.80 in., and we had rain 0.12 in., from the S.W.

We need only allude to the sudden fall of some four or five-tenths of the barometer downwards on the night of Tuesday, the 28th, followed by the tremendous down-pour, which reminded us of rain within the tropics, causing a flood in all directions, and, as we find, very serious inundations throughout the country, especially in the North Riding. A corresponding spurt upwards began on the evening of the same day; and thus the month ended, with the mercury again up to the fatal 29.80 in., with cloudy but still fair weather.*

Notwithstanding the frequent "dripping," the rain-fall of August was scarcely more than an average, if it was not a trifle below it in certain parts. Throughout the month the temperature has been very variable. For nearly twenty days it was considerably below the average; and to this must be ascribed its unfavourable aspect as a harvest-month.

We may observe that the propensity to frequent "dripping" in England is due to its moderate and variable temperature. The hotter or the colder countries are, the greater number of dry days will be their lot during the year.

If the low temperature of August has tended to check the cholera, the month has been generally unfavourable to the human constitution—in every way unseasonable.

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* As the reader is aware, the result was as foreshadowed by the above prognostic, a severe thunderstorm of rain and hail having broken over us on Sunday afternoon.

We shall conclude with two more observations. The quantity of water that annually falls in rain or snow upon the surface of the earth is much less considerable than we are apt to imagine, on account of the great number of rainy days in all countries, our own especially; and at the sight of those terrific down-pours which sometimes last several days. The diluvian rains of the tropics do not yield more than 7.86 inches in twelve hours. In our latitudes, however, when the quantity of water that falls in a day exceeds 1.17 inches, the plains are very soon inundated, as by the rain of last Wednesday. From this it will appear both how exaggerated our notions are respecting the quantity of water that falls in rain, and also how soon another Deluge could be produced, if the small quantity named can effect such devastation.

The other observation is respecting the probable rain-fall of the present year. At the end of June Mr. Symons announced that we had already had more rain-fall than that of the year preceding; and the quantity fallen was, within a few inches, equal to the average of the entire year. Several inches have since fallen; and yet we have before us four of the wettest months of the year, for in general the first six months are the driest. It seems, therefore, that this will be a very wet year, perhaps preparatory to a more than average harvest for next year.

IX. PERIODICAL PERTURBATIONS OF TEMPERATURE INJURIOUS TO THE HEALTH OF PLANTS AND ANIMALS.

Amongst the weather-proverbs of the French farmers there are four remarkable ones relative to certain saints' days or dates of the year, which are characterised by notable variations of temperature. First, we have the proverb respecting the 11th, 12th, and 13th of May, the days of St. Mamert, St. Pancrace, and St. Servais, who are said "never to go without cold and ice;" indeed, they are termed the "Icy Saints," on account of a marked decrease in the mean temperature of the period in question. Although the temperature rises rapidly during the last days of May, the farmers have remarked for ages, and the fact has been confirmed by meteorological observations, that during the first fortnight of May there occurs a notable refrigeration. Hence the supposed influence of these "Icy Saints." In fact, the temperature, after rising almost regularly every day during the month of April and sometimes the first days of May, suffers a sudden lowering, which is often accompanied by frost. Until this critical period is passed, the French farmers are anxious for the harvest; the rye, the wheat, the young sprouts of lucern, may then be struck down by sudden frost. So much for the Icy Saints.

Secondly, there is "The Summer of St. Martin," the 11th of November, or rather the preceding and following days, which are, on the contrary, remarkable for an increase in the mean temperature. The thermometer remains stationary, or even rises, and does not resume its normal lowering until after the period in question. It is scarcely necessary to state that we have from time to time seen the effect of this rise in temperature in England, on vegetation, giving us after-crops of vegetables and fruit in December, as announced in the papers, among the many instances of the extraordinary temperature of the season in question—green peas, of full growth and flavour, gathered in the first fortnight of December; a thorn-tree in full bloom, and presenting a May-like appearance on the 1st of December; an apple-tree covered with a second full crop of apples in the first fortnight of November; nay, even at Stockholm, an abundant supply of garden-produce, meadows covered with verdure instead of snow, in the first fortnight of November—all which facts we find recorded in the *Public Ledger* of 1818, and quoted by Luke Howard in his *Climate of London*, who further observes that the few nocturnal frosts that occurred up to the 12th of December of the year in question were so slight as to permit the nasturtiums—the tenderest of our autumnal garden-flowers—to continue to vegetate, and that other indications of the mildness of the season were equally striking. Here, then, we find two anomalies, the observation of which appears to be verified both by the tradition of ages and by the precise investigations of meteorologists. Doubtless, it is not a rare thing to find in the course of a year analogous perturbations; but for the most part these are merely local variations, irregular in their dates, and consequently deficient in that periodicity which characterises the refrigeration of the first days of May, and the increase of temperature in the first fortnight of November.

Thirdly, we find two other dates which have equally struck the patient, if rude, observers of the fields and the seasons. Whereas most rural proverbs are equivocal and conditional, those relating to the "Icy Saints" and "St. Martin's Summer" are affirmative, which is a rare characteristic of such popular sayings. One of these dates is the 6th of February (St. Dorothea in the French calendar), which is said to bring "deeper snow;" the other is the 10th of August or St. Laurence, which is also a critical period for the French farmers; but, like the 6th of February, it is less remarked and passes off, so to speak, unperceived. The reason is obvious: when the temperature is rising rapidly, as in May, a sudden refrigeration is perceptible to everybody—it is the same in November, with respect to the sudden rise of temperature—but a momentary refrigeration in the midst of a rigorous season in February, and an increase of temperature during the period of great heat in August, are only noted by those who attentively trace the variations of meteorological phenomena.

It is scarcely too much to say that all the weather-maxims of all nations are founded on fact, admitting of scientific explanation. At any rate, even the great French astronomer Arago, who never could be brought to believe in the moon's influence on the weather, had the courage to admit that there are in these popular sayings important truths, which it would be better to try and explain rationally, rather than to deny *à priori* their possible accuracy. In every case, moreover, they may serve to place us on the track of phenomena, the existence of which may have escaped our more methodical observations. Now, this result has actually happened with respect to the periodic perturbations in the temperature of the months of May and November, February and August, as handed down from time immemorial by these popular weather-maxims. Induced by these rural weather-proverbs of the French, M. C. St. Claire Deville has recently investigated the subject, and his conclusions, after immense research, are positive as to the perturbations of the earth's temperature, coincident, from time immemorial, with about the first fortnight of February, May, August, and November—attaining their *maximum* in *certain years*, whose periodicity he has been able to fix with apparent certainty.

The object of this eminent meteorologist was primarily to ascertain whether the four anomalies in our terrestrial seasons in question, as noted by popular proverbs and verified by scientific observation, were really constant—of an incontestable periodicity—and what were the limits of their action; for of course, if the character of these facts could not be established, it would have been utterly useless to try and compare them with phenomena of another order.

Examining in the first place, in its totality, a somewhat considerable period of fifty-seven years, comprised between 1806 and 1863, then another of forty years, between 1816 and 1856, M. Deville discovered that from the 10th to the 16th, or from the 11th to the 15th of each of the months of February, May, August, and November, the thermometric perturbation is clearly traceable, with the exception of the last, which, however, exhibits at most an increase in the refrigeration of the first days, followed by a decrease in the last days, of November.

Other documents—for example, 110 years of thermometric observation at Berlin—exhibit, for the 11th, 12th, and 13th of May, a very remarkable lowering of the temperature.

But of the four periods the most marked seems to be that of February.

A mere glance through the meteorological records of Luke Howard, for a long series of years, discloses the same perturbation of temperature at the respective dates or the periods in question.

So far, the statistical method adopted by M. Deville consists in calculating the mean temperature of the same date for a series of years, according to numbers which themselves express the mean temperature of the days in question. This is the method generally adopted in physical researches. Its chief advantage consists in enabling us to eliminate from accidental variations those constant variations which permit us to establish the law of any phenomenon. On the other hand, however, this method is attended with the serious liability of masking under an artificial uniformity the real anomalies by which the periodicity of the phenomenon is effected. If employed alone, without the control exerted by the examination of the *maxima* and the *minima*, it may lead to erroneous conclusions. M. Deville was perfectly aware of the liability of error, without these precautions. His object was to verify a theory suggested as far back as 1840 by Professor Hermann, of Berlin, in a letter to the French astronomer Arago, couched in the following terms: "The two swarms, or currents, of asteroids (planetary bodies) which the earth meets on the ecliptic, respectively about the 10th of August and the 13th of November, annually intervene between the earth and the sun, the first during the days of the 5th and 11th of February, the second from the 10th to the 15th of May. Each of these conjunctions annually causes, at these dates, a very remarkable extinction of the *heating rays of the sun*, and thereby lowers the temperature at all points of the surface of the globe."

The great display of these meteors on the evening of the 12th of November, 1833, was perfectly appalling. The number exhibited every quarter of an hour was not less than 10,000, being at the rate of 40,000 per hour; and as the phenomenon lasted for seven hours, the total number must have greatly exceeded 280,000. It may therefore be inferred that on this memorable night of the 12-13th November, 1833, at least 300,000 masses forming part of the solar system, and foreign to the earth, passed through the atmosphere of Boston, United States. From the apparent magnitude of many of the meteors, and their probable distance, it was conjectured that they were bodies of a very large size, although it was impossible to ascertain their magnitude with any certainty. It was supposed that they were only stopped in the atmosphere, and prevented from reaching the earth, by transferring their motion to columns of air, large volumes of which they would suddenly and violently displace. It was remarkable that the state of the weather and the conditions of the seasons following this meteoric shower were just such as might have been anticipated from these disturbing circumstances of the atmospheric equilibrium.

In connection with the subject we may remind the reader that "shooting stars" have always been considered signs of weather; and another Frenchman, M. Coulvier-Gravier, who has investigated them in this point of view, believes that they show the direction of the coming wind; that their slow motion foretells a calm to ensue, or to continue if it exists; in fact, he says they are our anemometers or weather-cocks in the upper regions of the sky.

M. Deville's object, however, was different. It was not only to verify the perturbations in temperature before mentioned, but also to discover if these perturbations are or are not connected with the epochs of the periodic returns of these meteors or shooting stars. But, as he began the investigation without any preconceived idea respecting the nature of the relations that might exist between the two series of phenomena, he did not content himself with a general consideration of the observations on which it is based. Besides, the facts so long known suggested of themselves a different kind of examination. It was known that the apparition of meteors under the name of shooting stars were subjected—in their *maxima*—to considerable variations. For instance, the apparitions of November vary in a period of about thirty-four years. Two very brilliant *maxima* occurred in 1779 and in 1833. From the last date the phenomenon has diminished in intensity almost to disappearance—although sufficiently remarkable last year—to recommence its ascending march, which it will attain, according to the prediction of Olbers, in 1867, or next year. In like manner the apparitions of August presented a maximum about the years 1847 and 1848.

He had therefore to discover whether the temperature of the days forming the critical periods exhibited corresponding variations in the refrigerations of May and February, as in the opposite effects in August and November. With this object M. Deville made two different comparisons. He took two periods of ten years, in the midst of which were found the *maxima* in 1833 and in 1848, calculated for those periods the temperatures of the critical days, and compared the results either with those of the period of fifty-seven years before mentioned, or among themselves.

The result is, that in February and May, the 12th of the month is always the centre of an oscillation of temperature. Only, in February, the oscillation of the period 1843-1855, or of the *maximum* of the asteroids of August, is long and considerable; while the oscillation of the period 1829-1839, or of the *maximum* of the asteroids of November, is very short and very feeble, and inversely for the month of May. We may therefore conclude from this double circumstance that the *passage of the earth* in the vicinity of the groups or clusters of asteroids is the cause of the remarkable oscillations of temperature in February and May.

But it is important to add, that if these two periods manifestly show oscillations on certain days the direction of the oscillations are sometimes inverse. This remark is of a nature to complicate in a great degree the nature of these coincidences. How, indeed, if the lowering of the temperature is in certain cases correlative with an interposition of the meteors, can we reconcile the hypothesis with the absolutely contrary effect of a conjunction coincident with an increase of temperature? But, before seeking a rational explanation of the facts, the first duty of an inquirer who is honestly desirous of discovering the truth in any investigation, is to verify and establish the facts without shutting his eyes to any of the anomalies which they present.

If the thermometric perturbations of the four months in question are due to cosmical causes—if they present a relation, as to their origin, with the passage of shooting stars, the entire earth should experience them at the same time. So far the meteorological documents brought to support this relation belong exclusively to stations in the northern hemisphere and the temperate latitudes. Is the same effect apparent in the regions of the torrid zone and the southern hemisphere?

Now, eight years' observations made at St. Louis on the Senegal (latitude 11 deg. 25 min. N., longitude 11 deg. 15 min. W.), show a remarkable lowering of the temperature, on one hand, for the six days of February comprised between the 12th and 17th; on the other, for the period from the 8th to the 13th of May.

Again, the perturbation of the month of August is specially remarkable at the island of St. Helena, according to seven years' observation; at Hobart Town, Australia; and at Papehete in Haiti, respectively for eight and three years. In the two last stations the oscillations of February and November are nearly null, but the *maximum* of August is, on the contrary, very evident and very strong.

Moreover, we may observe that the month of August is the coldest of the year in the southern hemisphere, so that, "as in the northern hemisphere, it is the coldest month in the southern that suffers the greatest oscillation."

M. Deville has found in other series of thermometric observations made at Calcutta, Madras, and British Guyana, the the confirmation of this extension of the perturbations to the tropical regions. Moreover, we may remark that the phenomenon is strikingly apparent in the years 1833-34-35, that is, at one of the critical epochs which we have mentioned, and bearing out our suggestion.

But if the refrigeration be caused by a sort of eclipse of the sun effected by these small planetary bodies clustered together, how are we to account for their producing an increase of temperature in August and November? The reply is, that whilst in February and May they merely intercept a portion of the heat radiated by the sun to the earth, they, on the contrary, in August and November, as solid bodies, check and diminish the earth's radiation in space, and also retard her refrigeration by returning to her a portion of the heat which they themselves receive from the sun.

M. Deville has not restricted his attention to the thermometric elements of the question; the barometic pressure, the tension of watery vapour in the atmosphere, the ozonometric means have been added by him to the tables which indicate not only the mean temperature of each day, but also the excess of each day, at noon and at the hour of the diurnal maximum, by a thermometer with a blackened bulb compared with an ordinary one, exposed near it in the shade. All these elements have verified the perturbations already attested by previous documents, and, according to M. Deville, "they justify us in believing that these periodic perturbations are accompanied by a modification in the effects of the solar radiation, and in the proportions of that *active principle*—whatever may be its nature—which changes the colour of paper impregnated with iodide of potassium," namely, OZONE. The ozonometric observations made with the greatest assiduity by Dr. Bérigny, at Versailles, confirm those of M. Deville made in the environs of Boulogne.

"Do not all these considerations," observes M. Deville, "almost necessarily lead us to infer the influence of these critical periods—by their sudden variations of temperature—not only on the health of the vegetable creation, but on that of the human race? Should we not examine the registers of hospitals to see if certain diseases are not more frequent on certain *days* of certain *years?* Can we not even go back to the past, and see—in the history and chronicles of past ages—if there was some trace of periodicity in certain great perturbations in the health of nations—like the invasions of cholera, which occurred in 1832 and in 1849—about the *centre* of the two critical periods, and which came from the *north* like the Aurora Borealis? since it seems also that it is the great atmospheric waves that propagate the perturbations of temperature."

When M. Deville suggested the connection of the visitation of cholera with these cosmical perturbations of temperature, he had no idea of the impending outbreak, nor of the *cattle plague* which has not as yet ended its ravages.

Whilst the other years of partial outbreak of cholera and influenza coincide with similar atmospheric perturbations, we have now apparently established the period of *seventeen* years for the great manifestations of this terrible disease—1832, 1849, 1866!

At any rate, there seems good ground for believing that we have at length got a clue to the periodicity of this dreadful plague; and if so, the advantage we may take of the fact—if such it be—will be attended with immense results in enabling us to prepare for its future visitations.

The present or apparent lull in the ravages of cholera should not mislead us into a fancied security. The unseasonably low temperature of late has given us a respite—probably nothing more. The germ of the disease exists among us; and a change in the weather to *heat and moisture* which may be reasonably expected, may, as of old, intensify the violence of the scourge. It is usual to say that to be fore-warned is to be fore-armed; but then we must resolve to help ourselves in the present instance by redoubled sanitary precautions, if, under Providence, we wish to entertain any reasonable hope of lessening our national wounds in so terrible a conflict.

X. WHAT MAY BE DONE IN BAD HARVEST WEATHER.

It would be difficult to find throughout the meteorological records of the present century a year more unfavourable than the present for harvest operations. The hopes and fears of early spring and advancing summer have at length settled down to the conviction, if not that "all is lost," at any rate, that all is more or less damaged—the harvest of this year a failure. Nor is this the case only in England. Other countries have suffered as much—Germany, Italy, France, and the United States. Russia and Spain appear to be the only favoured lands this year, having had an excellent wheat harvest.

In England the result is aggravated by the belief, pretty generally maintained, that the yield is good—if we could only secure it. This has been the most fickle and difficult weather for harvest since 1860. Corn has been got up by "snatches" as it is termed, and although some of our farmers have finished their harvest, many acres of wheat are yet to be cut, while a great extent of land is covered with shocks of wheat and mown barley and oats, which are literally spoiling from the incessant rains. Fine crops of both wheat and barley are sprouting, and will doubtless turn out much discoloured, and only fit for cattle feeding. As a consequence of this deplorable state of things, the labouring classes will be immediately affected by the protracted harvest, as the loss of time occasioned by the wet weather will reduce their earnings to about ordinary day-wages.

There has scarcely been a thoroughly good harvest day in August; clouds or rain have ruled it throughout, as well as the first fortnight of the present month. There certainly is a reasonable hope that we have already had the great majority of rainy days which constitute the average of September, even in a wet year; still the state of the ground below and of the skies above makes it more than probable that the grain will be exposed yet awhile to occasional showers, and a temperature sufficient to entail all the evil effects of secondary germination, or final *must* or *smut*, which has damaged many a crop even more favourably gathered than the present is likely to be. A most perishable property is thus at the mercy of the elements, and lies like a wreck before the hopeless proprietor. His harvest is being drowned, and he cannot save it.

Such is the account which we read on all hands, and it remains for us to consider the subject in all its bearings, in order to see if certain measures could not be generally adopted which, if they did not enable us quite to bid defiance to the elements, might at least place us in a much better position than we enjoy at present.

No doubt that science, skill, and capital have done wonders for agriculture. Drainage, manuring, the choice and rotation of crops have brought farming almost to perfection. We are enabled, so to speak, to do just what we like with the soil. But, unfortunately, when we have done everything that ought to be done—we find ourselves helpless at the last moment; the art of man seems to fail at the critical juncture when the crop is to be got in. After a year's continual labour and anxiety the farmer all at once becomes hopeless, and sees nothing to be done but to "wait for the fine day" that will not come, or that only comes just to set the grain sprouting, and then give way to a run of bad weather!

We believe that a little more attention to his weather-instruments, a little more knowledge of the scientific principles of the weather, would be an advance in the right direction by the farmer, since it might enable him to avail himself of the respite, however short, which the weather may give him on such occasions. The man who has courage to begin his operations under an unfavourable sky, but with good ground to conclude, from the state of his instruments and his collateral knowledge, that a fair interval is approaching, may often be profiting by his observations, whilst his cautious neighbour, who has waited "for the weather to settle," may find that he has let go the opportunity. This superiority, however, is attainable by a very moderate share of application to the subject, and by keeping a plain diary of the barometer, the rain-gauge, the hygrometer, and the vane under his daily notice.

Surely it will be better for the farmer to guide himself in this matter, from season to season, from month to month, from week to week, and from day to day, according to the simple principles suggested in these articles, rather than trust to almanacs or predictions, which, by the very nature of the things themselves, can rarely be applicable to *every* locality in the kingdom, even when not entirely fallacious.

On the other hand, is it absolutely necessary that a crop should be left standing long after it is necessary to be cut, or left lying for weeks after it is ready to be carried? In the North of Europe they actually dry their corn in kilns, as being better than losing it altogether. Indeed, if the farmers of these regions waited for the weather to "settle," they would never be able to settle their accounts, in their uncertain seasons. In like manner, the Irish and the Normans and Bretons of France make up their minds to expect rain, and collect their crops in small ricks all over the field, and thus escape a greater injury by the certain amount of loss there must be in this process.

Here in England, it is now abundantly evident that we must expect five or six rainy summers in succession, apparently in consequence of some law of compensation. The same thing has occurred before. In 1816 or 1817, we forget which, bean-crops stood out ungathered till Christmas, and the stacked wheat had to be taken out to be dried, to check germination, when it was found to have sprouted. Although we may not be able to ascertain the exact cycles of bad weather, it is surely sufficient to know that something of the kind exists, and, therefore, that we should devise and employ the means of counteracting their disastrous effects.

There are two things to which we must call attention, which appear to be opposed to the chance—for such it is—of being able always to secure the harvest, in our uncertain climate.

Not content with endeavouring to force the soil to the utmost by means of stimulating manures, we make it subserve a double function: we grow grass or clover-seed with the barley or oats, so that, when the grain-crop has been gathered, we may find the field ready laid down with green food.

No doubt this plan is considered a capital idea. It brings down two birds at one shot, but only provided we have a good, genial season. What *must* happen, if it turn out to be wet? Why, our double crop is rendered more *retentive of the wet,* and the more important crop must suffer. This fact may ount for the *retardation* of the harvest, even in seasons less favourable than the past.

Secondly, the want of *straw* makes us blind to the consequences of waiting until we can secure it in the greatest abundance. Straw is more valuable than it was formerly: more is done with it: it is in demand. Therefore, it will not do to cut the corn short, "with only a hand's-breadth of stalk," as was the custom of old. We must have all we can get of it; and so we must wait for the weather, until we can ecure as much straw as possible, together with the grain. Our greediness makes us wait; and so we wait until we find ourselves "in the lurch," as at present. We must take the consequence, if we persist in this determination.

In foreign countries, and in accordance with the ancient agricultural usage, long straw is left on the ground, to be ploughed-in for the benefit of the future crop. It seems wasteful to us; but it is a true gain, because it is in accordance with the requirements of Nature that something should be left to her out of what she yields for our benefit.

If, in addition to the fact of enabling us to get the utmost from the soil, science can devise a satisfactory plan for permitting us to go on as we have been doing, and yet be able always to supplement the requisite drying process by artificial means, then we may become, in a measure, independent of the season.

From the papers it appears that grain is now largely dried, and even brought from bad condition into good, by currents of air forced through it by steam-power. If in former times mere ventilation answered the purpose, surely our powerful mechanical appliances will succeed much better. We can not only dry a blanket in five minutes by machinery, but drive thousands of cubic feet of air per minute through a mile's length in our coal-pits, and employ the same process in a variety of ways in our manufactories, and in effecting expeditious locomotion.

Such is the problem for science to solve, with respect to the drying of our crops; and, judging by analogy, we see no reason why the thing should not succeed as easily as in the drying of a blanket.

XI. WHAT BECOMES OF THE SHOWERS?

"What's the use of all this rain?" is one of those questions the answer to which involves far more than we are apt to imagine. Such, certainly, is the case with the answer to the above question, and the investigation which it pre-supposes is one of the most interesting in the domain of science.

On the other hand, we may observe that the implication as to the *quantity* in "all this rain" is apt to be vastly exaggerated. The quantity of *water*, either in snow or rain, that annually falls on the surface of the earth is much less considerable than we fancy from the number of rainy days in the year, and even from those implacable down-pours which sometimes last for entire days and nights in succession.

The "deluging" rains of the tropics—where it does, indeed, rain as nowhere else—do not positively produce more than eight inches of water in twelve hours; and in our latitudes, when we hear of floods and inundations, as recently from the heavy downpour of the 29th ult. in various parts of the country, the absolute rainfall does not much exceed one inch and a quarter. The rain-gauge is the only test in this matter, and it dispels the delusion. But, indeed, according to M. Becquerel, if the entire quantity of aqueous vapour in the atmosphere at any time were condensed into one diluvian downpour, it could not produce a depth of more than *four inches* of water on the face of the globe. Surely this is more than enough to us an idea of the small quantity of water that falls even in heaviest showers. Moreover, we have ever and anon to plain of its deficiency, whilst surrounded by its great source, world-encircling ocean.

A great portion of the surface of our planet is covered with ter. The ocean drapes it round about as with a graceful ment, disclosing here and there much that is charming, and where what is anything but charming. If her surface be resented by 1, then the different seas and oceans united to-her would be expressed by 0.75, or, in plain language, three-arters—without, however, including the various lakes, ponds, rshes, rivers, streams, and rivulets. Moreover, the dark in-ior of the earth herself contains an immense quantity of ter, since we meet with water wherever we dig. In the tting through marly clay for the railway from Tours to Bor-aux, between the valleys of the Cher and the Indre, M. Rozet discovered an immense quantity of *filets* of water, which crossed each other in every direction, and which might be compared to the veins in the body of an animal. Indeed, one cannot help considering water as the blood of the earth, which certain philosophers have considered a *living being*, with all the plants and animals preying upon her surface or skin, after the fashion of the parasites or very disagreeable insects which prey upon the skin of every animal. The soundings made for the construction of Artesian wells, or wells delivering water from great depths, show that there exist at very considerable depths immense masses and even currents of water; and it is these subterranean waters that give rise to all the water-courses on the surface, as well as the fountains and the lakes.

Now, as water is constantly changing into vapour at all temperatures—even when in the state of ice—all the water on the surface of the earth, and consequently in its interior, would become exhausted after a certain lapse of time, if there were no means of compensating its losses. This means is the precipitation of the vapour dispersed in the atmosphere—by dew, by snow, and by rain. As the level of the ocean, which is the great reservoir of the waters, has not varied for ages, as far as observation goes, it follows that the quantity of water continually carried off by evaporation is immediately restored by the precipitation of vapour. This fact involves the necessity of rain falling at all times upon a certain extent of the earth's surface; for the dew that falls every night could not alone compensate for evaporation. In effect, we know for certain that the seasons of sunshine in certain countries correspond to the seasons of showers in others, and *vice versâ*. Even in a country, rain is never or seldom general, any more than drought—at any rate, in our latitudes; hence, as previously observed, the absurdity of the almanac weather-predictions for every day in the year, without specifying the locality.

Rain, then, is indispensable for the maintenance of the universal equilibrium of the waters covering a portion of the surface of our planet, which nourish in their interior an immense number of living beings, plants, and animals, and serve to quench the thirst of those which live on the surface.

We all know the great influence of rain on the progress of vegetation, and that those countries which are deprived of it, without any watery compensation—such as the deserts of central Africa—are stricken with eternal sterility. It is not only by the moisture which it conveys to the soil that rain supports vegetation. Rain carries down with it a certain quantity of ammonia, from which the plants derive nitrogen—a gas which is indispensable to their growth. It also introduces into the soil the detritus of animals and plants, which decay, without any benefit to vegetation, in those countries where it never rains. By moistening the manure which the cultivator buries in the soil, rain facilitates its absorption by plants. Finally, it is probable that it is by means of the decomposition of the water which they absorb that plants procure a great portion of their hydrogen, if it be not, indeed, all their hydrogen. It is quite certain that more than 75 per cent. of all plants and animals consists of water; so that, after all, we may fairly be amazed at the thought of the size, the strength, the vigour, and all the other manifestations of plants, trees, and animals, man included, all which would vanish into nought were they deprived of the water in them, which is more than three-fourths of their entire substance!

The masses and watercourses underground, by reason of the capillarity and the property which water has of penetrating into all permeable bodies that touch it, suffer continual losses from the quantity of water which they send to the surface of the soil, on all the points where there is no permeable layer, like potters' earth, betwixt the surface and themselves. Now, this is the means which, in a great measure, supports vegetation during drought. Anyone may convince himself of this fact by delving under such parts of a field or piece of ground in which the plants appear greener than in others, when he will find the soil moister than elsewhere, and moist even when the remainder is absolutely dry. Evidently this moisture can be derived only from the interior. In all the oases of the deserts, where it never rains, water is found by digging to a small depth; and it is to its presence that those countries owe their beautiful vegetation in the midst of arid sands. That water certainly comes from the interior of the earth by currents issuing from ths mountains which border the deserts; and these oases are points situated above those currents, over which there happen to be no impermeable layers between them and the soil, or above interior reservoirs in which water has accumulated, and which are covered only with sand.

Thus the aridity of the deserts is not only due to the fact that it never rains there, as has been supposed, but also to the fact that an impermeable layer prevents the subterranean waters from mounting up to the surface of the soil.

It is generally believed that the subterranean waters are supplied by those of the rains and snows which filter gradually through the soil; but, according to M. Rozet's experience and observation, it seems certain that rain-water never penetrates to a great depth in our arable soils which are permeable to water, but which have no fissures. It requires more than one day's continual rain to moisten cultivated soil, after an ordinary drought, to the depth of eight inches; and after the heaviest rains, continued for several days in succession, the soil is not moistened beyond the depth of forty inches. But, indeed, this fact becomes at once apparent by observing the small depth of the layer of water that generally falls in a heavy shower. Moreover, all this water does not penetrate into the soil: a great portion of it runs on the surface to the rivulets, rivers, &c. A portion of that which penetrates into the earth is pumped up by the plants, which pour back again a great part of it into the atmosphere. The currents of air, in sweeping the surface of the soil, carry off from it, at every instant, a portion of the moisture which gets into it. Finally, the natural heat of the soil reduces into vapour a part of the water which it receives. From all these causes united, it happens that the water which penetrates through the particles of arable soils can never descend to a certain depth, and that a few dry days will suffice to exhaust it entirely.

It follows, therefore, that the water which supplies the subterranean reservoirs does not get there by penetrating the earth above them, as a mass of sand. It passes through the *fissures of rocks*, which are very numerous, especially in mountainous countries, being, as it were, nature's rain-gauges on the everlasting hills: hence the fact that such countries are situated betwixt the great reservoirs of the subterranean waters.

Certain meteorologists say that the mountains are regions of reservoirs because it rains more on mountains than on plains; but it happens to be just the contrary. It certainly rains *oftener* on mountains, but the annual rainfall of mountains is less than that of the plains at their feet. This is an incontestable fact, and it must be evident even from the consideration of mere altitude or height; all other conditions being equal, the greater the height of a locality the less the rainfall as shown by the rain-gauge. The summits only get, as it were, a slice of the showery column.

On the other hand, it appears that when rain takes place with a turbid atmosphere, a considerable and variable proportion of the water is actually separated from the vaporous medium at a height not exceeding 50 feet; but in showers from an elevated region, falling through an air which is not itself undergoing decomposition, the products ought to be alike above and below. Again, during the heats of summer a portion of the rain falling from an elevated region of the atmosphere is vaporized near the surface by the heat of the latter. If such be the case, of course elevated gauges will give greater results than those on the ground.

It rains oftener on the mountains than on the plains because their summits, in popular parlance, attracts the clouds. Electricity, perhaps, plays a great part in this phenomenon; but we are very far as yet from having settled the point. What is certain is, that the elevated summits of mountains, radiating in all directions into space, cool more than the soil of the plateaux situated below them, whilst they are also frequently surrounded with snows and glaciers. They are, therefore, regions of *minimum* temperature, which condenses the vapours in their sphere of refrigeration, and compels them to form *clouds*. In Italy much less rain falls at the south than at the north of the Apennines; and a vast deal more falls at Bergen, at the foot of the Scandinavian Alps, than at Chambery, at the foot of Mont Blanc.

The snow which at certain seasons covers the surface of the soil, finally melting, below the limit of perpetual snow, also supplies the earth with a great quantity of water, which moistens it more than the rains; in fact, the melting of the snow being generally slow, the ground can continually absorb its products; whereas a great portion of the water from heavy showers flows over the soil, following the lines of the greatest slope towards the bed of rivulets and rivers, as before stated. On the other hand, the snow, remaining and preserving the surface which it covers from the contact of the air, prevents to a great extent the evaporation of the water which filters through; moreover, during the snow season the ground is much less covered with vegetation than during the rainy season, and we have just stated that plants continually carry off from the soil in which they live a notable portion of the water which it has absorbed.

It is not only by means of the water with which it furnishes it that snow is useful—very useful to vegetation. Snow is also a huge screen interposed between the surface of the soil and the celestial spaces; it obstructs the radiation of the soil's heat into space; it enables the surface to cool much less rapidly than when uncovered by its woolly flakes: moreover, its white colour reduces the radiating power of the soil to the utmost. It is therefore certain that snow preserves the earth from cold during winter.

M. Rozet established this fact by direct and careful experiment during the last ten days of January, 1855, when the country round about Paris was covered with snow 2.34 inches in thickness. He found that the temperature of the air might diminish to a very great extent without the plants buried in the snow being in any danger from excessive cold. Moreover, during a thaw, the snow prevents them from passing suddenly from a low to a higher temperature, which is of itself the frequent cause of destruction to many of them when unprotected by snow. Hence, in northern countries, and in the regions of the Alps, the plants, especially the cereals, emerge perfectly vigorous from beneath the snow which has covered them for many months in the hardest winters. It is well known that wheat and many other plants vegetate under the snow at the very time when similar plants are destroyed by the cold in uncovered places. It is an established fact, in our latitudes, that those years whose winters are very snowy yield the most abundant harvests; and that when trees have been covered with hoar-frost during winter they produce an abundant crop of fruit. It even appears, from the experiments alluded to, that snow in the vicinity maintains the temperature of the soil which may be uncovered, to a limited extent.

The surface of mountains cools more rapidly than that of plains, and there are two causes of the difference: first, their great elevation; and secondly, because, as isolated places, they lose a great amount of heat by radiation. Now, if during winter that surface remained naked, the great intensity of the cold might destroy both the plants which grow there naturally and those cultivated by man: thus, the snow preserves them from this calamity.

Some such function as this, we mean the preservation of the earth's internal heat, must be subserved by the *perpetual snows* of different regions. Those huge isolated mountains would be vast radiators of the earth's heat if the line of perpetual snow did not interpose its veto. So we find that this line gets lower just in proportion to the necessity for preserving heat in the different latitudes. Thus, it is highest on the mountains near the equator (where there is plenty of heat to spare), and then goes on descending lower and lower, until, in fact, it has no elevation at all, snow being perpetual on the surface in the Polar Regions.*

On ordinary mountains the snow melts at the commencement of the warm seasons, and yields the water which, trickling through the numerous fissures of the rocks, goes to fill the subterranean reservoirs whence issue the rivulets whose combination forms the rivers which flow at the bottom of the valleys, making them fruitful, and then flow in the plains, where man makes use of them to water his plants, to give motion to his mills, and to transport his produce, merchandize, and bulky materials.

Thus, is the house of man built up by the Jack of snow, in the order of Providence. Admirable is the harmony that exists between all the phenomena which we have described. As before observed, according to the organisation of living beings, all of which contain a certain quantity of water, life could not be developed without the intervention of this liquid. A vast layer of water covers a portion of our globe, and masses more or less considerable circulate in its interior. In order to distribute this beneficent liquid to all organized beings which are not plunged in it, the earth is surrounded by a gaseous envelope—the atmosphere—designed to act as a vehicle to water; under the influence of the heat of the sun and the proper heat of the earth, the water rises slowly, and in the shape of molecules, into the atmosphere, until the lowering of the temperature brings it back into the solid state. Forces which are as yet unknown to us, but among which are certainly electrical influences, keep the vapour of water in the solid state, and also in the vesicular state in suspension in the atmosphere, in the upper regions where the air is exceedingly rarefied. In these two states, vapour may form, for a considerable time, homogeneous layers which are not always visible below; but circumstances, still unknown to us, determine certain groupings in these layers which finally produce *clouds*. It is a sort of summons which bids the vapour to prepare to descend again into the reservoirs whence it went forth before.

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* According to Humboldt there is constant snow on mountains near the equator, at 15,700 feet; at 20 deg. lat., 15,000 feet; at 45 deg. lat., 8,300 feet; and at 66 deg. lat., 4,900 feet. According to M. Renou, the relation of the perpetual snow line is as follows: *In all countries of the earth the limit of perpetual snow is the altitude at which the hottest half of the year has a mean temperature equal to 32 deg. Fah.*

Soon after the two species of clouds, the icy and the vesicular, are formed, they unite to descend together, at first in the shape of snow, which dissolves into rain on reaching the lower regions.

A portion of the water which falls upon the earth goes directly into the ocean, the lakes, the water-courses; a second portion goes to the same destination after flowing over the soil; the third filters into the earth through the fissures of the rocks to go and compensate for the losses of the subterranean reservoirs; and, finally, the fourth is almost immediately restored to the atmosphere by means of the expiration of plants and the evaporation caused by the proper heat of the earth.

Thus, there exists a continual and universal circulation in the terrestrial reservoirs of water, even up towards the high regions of the air, and from there towards the same reservoirs. It is an endless chain in perpetual motion. This perpetual movement brings to each living being the quantity of water it needs, whilst, at the same time, it tempers the heat of the sun in summer, and the intensity of cold in winter. Both, especially the former, would be intolerable without the moisture of the air.

Such is the simplicity of the mechanism which gives and secures existence to so many millions of organised beings, and we have, literally, only to open our eyes to see it in operation, and to comprehend it in its totality. The least we can say is—Thank God for it!

XII. THE RAINFALL OF SEPTEMBER.

Throughout the meteorological records of the climate of England we find no parallel to the weather of September last in rainfall, although, oddly enough, the mean temperature of the month happens to have been just about the average.

In this most important respect—in connection with the health of mankind and vegetation—the September of last year was just the reverse. Far from decreasing as usual, the temperature rose higher. There was excessive heat and continuous drought, to which is attributed the development of a multitude of diseases, especially in France, where many places had no rain from the beginning of September to the end of October: the largest rivers manifested the failure of their waters: insects re-appeared, just as in the beginning of spring: flies were especially numerous during this strange month. As to the general condition of Europe during the month of September, 1865, there were storms in Russia and Italy on the first three days; in the Baltic, from the 4th to the 6th; in the North of France, on the 7th and 9th. From the 16th to the 23rd there was fine weather in France and in Central Europe; but on the last-named day there was a storm in the Channel and in Spain, whilst fine weather existed in France. From the 27th to the 30th of September the weather was alternately fine and overcast, with incessant variations of temperature, which have been very injurious to the public health. Such was the September of 1865.

The changes in the state of the atmosphere in autumn, which commences on the 8th of September, are all referable to one and the same cause—the return of the sun to the south. The heat declining daily, the store of vapour in the atmosphere undergoes a continued decomposition; the loss of weight or pressure arising from which is made up, as in summer, by an equal production of new vapour. Hence a declining barometer, with extensive heavy rains, but chiefly in the latter part of the season. The whole increase, derived on the average of the barometer in spring and summer, is thus disposed of, and the atmosphere returns to its minimum weight or pressure. From the more saturated state of the air, the evaporation falls short of the temperature; and the hygrometer—at the same mean temperature—exhibits an average of about 8 degrees more moisture than in spring (79.3 against 87—saturation being equal to 100).

In general, and as we expect, the fore-part of this season is, in spite of these meteorological conditions, the most delightful period of the year in our climate. When the decomposition of vapour, from the decline of the heat, is as yet but at its commencement, or while the electricity remaining in the air continues to give buoyancy to the suspended particles, a delicious calm often prevails for many days in succession, amidst a perfect sunshine, mellowed by the vaporous air, and diffusing a rich golden tint as the day declines upon the landscape. The past September has been otherwise. Instead of the stratus cloud (its usual attendant)—the lowest and most singular of cloud-land, coming forth in the evenings to occupy the low plains and valleys, and shroud the landscape in a veil of mist, until revisited by the sun—we had nothing but nimbus or rain cloud, positively every day of the month in some part of the country, if not everywhere. At Leeds, on the morning of the 5th, there was a canopy of cloud, which occasioned a darkness as dense as midnight, lasting about a quarter-of-an-hour, during which the gas was lighted all over the town, and outdoor occupations were completely suspended.

With respect to the barometrical pressure of September, we may observe that during the month the greater oscillations begin to come on again, in proportion as the temperature declines, and the two great currents (polar and equatorial) get more interchange of direction northward and southward. Hence the range of the barometer is usually very great—according to Luke Howard's observations, 1.54 inches; but during last September the range did not exceed, if it ever reached, 1 inch, and yet the month was characterized by the prevalence of gales and excessive rainfall.

The maximum reading of the barometer in London was, on the 18th, 30.09 in.; the lowest, on the 22nd, 29.20 in. The mean temperature of the month was 58 deg., or 7 degs. higher than the last seven years' mean, and the daily range of temperature has been very great: hence the increase of cholera and general unhealthiness of the month. The degree of mean humidity was 85.

The prevailing winds of September are generally the class S.—W., but during the last month we had W. and S.W. winds almost *incessantly*. At Portsmouth there was a destructive gale on the 6th; and in Cornwall, both on the 4th and 6th, a hurricane raged with fearful violence, broke down fragments of timber trees, which, acting as a barrier, choked up the descending streams, and produced great floods. During the last week the general direction of the wind was S.E., attended with some of the heaviest rainfall of the month for instance, at Wakefield, on the 24th, 0.77 inch, at Clifton, on the 27th, 0.61 inch, at Manchester, Eccles, and Clifton, on the 28th, 0.77 inch, 0.76, and 0.71, respectively; at Birmingham, on the 24th, 1.17 inches. Thus the heaviest rain came with S.E. wind from the Continent, as observed to be the case in a previous article. But in accordance with the apparent insufficiency of the barometric fall to account for these violent atmospheric commotions, the direction of the winds at times demonstrated a conflict of the two currents, polar and equatorial. Thus (as recorded by Mr. Allnatt, in his letter to the *Times*), on the 11th, the whole day was gusty and tempestuous, the wind dashing from S. to N. in direct movement, and retrograding to S.S.E., thus describing an almost instantaneous arc of 200 degrees of the compass. In like manner, on the 14th, whilst its main force was almost due W., the wind, in retrograde and direct motion, described an arc of 300 degrees; and on the morning of the 17th such small circular currents prevailed, that the vane of the weathercock on several occasions described the entire circuit of the compass.

Nothing could more conclusively demonstrate the conflict of the two currents; in fact, the eminently "unsettled weather" of September can only be explained by the close proximity of the two main currents throughout the month—tending constantly to destroy the atmospheric equilibrium alternately, yet on no occasion to any great extent.

The temperature of August seems to be the explanation of this state of things. Up to the 20th of August the mean temperature was considerably below the standard, with *constantly cloudy skies* throughout the month, which caused the refrigeration in spite of S.—W. winds. Then followed, during the last ten days, a degree of temperature *above* the average. Evaporation which had been checked was then redoubled and the accumulated vapour stored over Great Britain and the neighbouring countries thus remained ever ready for condensation into rain. On the 24th of August, according to Mr. Alnatt, there was complete saturation of the atmosphere with moisture, and the foliage of high trees poured down its accumulated condensation in complete showers.

A continuous cloudy sky during any part of summer will ever be followed by a "rainy season," reminding us of the same in the tropics.

The rainfall of September was certainly tropical. The average rainfall of the month does not exceed 2 inches; the number of days on which it usually falls is only 12.3; it is the month which stands next in point of dryness to June, being in this respect nearly equal to March.

Now, in the last September, rain fell in England every day from the 1st to the 27th, and amounted in the aggregate to upwards of 6½ inches. On the 5th and 6th, in various parts of the midland counties, the meadows were submerged, and all the low-lying lands were visited by disastrous floods, grain crops were destroyed, and in Leicestershire the turnpike roads in several places were laid under water. At Plymouth such rainfall had not occurred for half-a-century as that which fell during the week ending the 8th, when the ancient and picturesque bridge across the Plym, and other structures, were swept away. In Cornwall the low lands presented the appearance of a lake, and great damage was sustained. At Malton the fall was so great as to obstruct the drains, convert the streets into rivers, and submerge the basements of several houses. So far Mr. Allnatt. According to Mr. G. Brown, the rainfall at Callington, Cornwall, was 12½ inches nearly. There was but one day without rain during the month.' According to another correspondent, five miles north of Newport, Monmouthshire, the extraordinary quantity of 11¼ inches of rain was registered during the month, at an elevation of 360 feet above the sea: over 2 inches on one occasion fell in 24 hours. On the Cotswold Hills, near Cheltenham, the rainfall of the month was 8.29 inches. At Seathwaite, the wettest spot in Europe, there fell 8.14 inches above its enormous average. In London it rained 25 days, and the fall at Camden Town was 3.89 inches; elsewhere 3.21 and 3.54 inches, which is less than London had in September, 1863. With a few exceptions, such as Portree in the Isle of Skie, and Sandwick in the Orkneys (where they had very fine weather), there was excessive rain throughout the country.

In such extraordinary circumstances there is matter for reflection. These diluvian rains have prevailed on the Continent as well, with the usual consequences—wide-spread inundations, rivers overflowing their banks; even the Seine threatening Paris. Most of the rivers have risen from 18 to 25 feet above the ordinary level. The labourer and his cattle are everywhere driven from shelter; the *debris* of barns and cottages float on the swelling tide; bridges and embankments are swept away; roads and railroads are broken up; people in towns are moving about in boats. The destruction of property is incalculable, and the populations will have reason to be thankful if it be unattended with the loss of life. Such is the account received from the Continent.

But this is no new calamity there: the thing is frequently recurring. The same happened in 1825, 1836, and 1846—an ominous *ten-year* period, or something very like it, and corresponding with full, heavy, or excessive rainfall in Great Britain. Thus, in 1825, the rainfall was 26.57 inches; in 1836, 33.49 inches; in 1846, 29.57 inches. In 1866 what will it be? It is impossible to say; but already it is far above the average; and at Callington, Cornwall, it amounted to nearly 41 inches at the end of September.

The year 1825, not having a very excessive rainfall, gave a good harvest, followed by two good harvests in succession—that is, the price of wheat remained nearly stationary for two years (58s. 8d., 58s. 6d.) In 1836, however, the rainfall was excessive, and there was a bad harvest, followed by three bad harvests in succession. In 1846 (the year of the repeal of the corn-laws), the rain was in excess, with a bad harvest, followed by another very bad harvest. In the year 1856, we escaped, but, apparently, only to be terribly punished in 1866. What are we to hope respecting next year's harvest? And should not the farmers turn their thoughts on *green crops?*

We shall do well, perhaps, to make a note of the period. Any hint must be acceptable in a matter of such obscurity. This is not the only hint given to us by the present disasters on the Continent. In a previous article, we pointed out the evil consequences to the climate—as far as the fertility of the soil is concerned—resulting from the clearance of forests, which are one of the means provided by Nature for securing adequate rainfall. They are not the only cause of rain, as must be obvious; for rain mainly depends upon atmospheric conditions. But whilst forests tend to secure an adequate rainfall, they also constitute a natural security against inundations from excessive rainfall, by preventing the crumbling down of the mountain sides in landslips and ravines, the ravaging of the plains by floods carrying down vast masses of stone and gravel—all which results from the binding roots of forest-trees. Trees also prevent the freshets, almost invariably attending, of late, every spring-thaw and every autumn rain. On the Continent, the suddenness and rapidity of the flow of waters have been determined by baring the hills, by widening the valleys, and smoothing down the grooves through which paths were opened for the slide of the felled timber. As a writer in *The Times* puts it: "Something like a universal loosening of the cataracts of the mountains has been effected; and the fall of the streams, from their sources to their mouths, has been increased in speed, in proportion as the filling-up of their channels, by the accumulation of their deposits, has clogged and slackened their course in the plain. The almost total disappearance of green vegetation in the higher mountains, and the overthrow of the barrier that dense and lofty timber raised against the violence of the winds, have both affected the degree of moisture and the heat in the atmosphere, and substituted an alternative of long droughts and sudden storms, instead of the mild and gradual transitions by which season followed season in those genial climates. Atmospheric influences are certainly not amenable to calculation by human rule and compass. The science which reasonably aims at determining their phenomena is still in its infancy; but there is little doubt that much of the suffering inflicted on mankind by what was attributed to the disorder of the seasons must be accounted for by their own recklessness and improvidence; and that, in many cases, as in these matters of inundations, what was in Nature only a casual and exceptional evil, has become permanent, and been greatly aggravated by circumstances under man's free control."

There is still a third hint that we may take, if we like, from these deluging rains. Why do we not take means to preserve the flood-waters? Why has not every district and town its well-made, well-kept reservoir always ready, to prevent the ravages of inundations, and to afford a cheap and plentiful supply of the fluid which becomes so precious in the time of drought? The present system of water-companies is to intercept the regular flow of streams, and reject the flood-waters. Nothing can be more wasteful. Again, some of the companies draw upon the natural lakes, which must eventually be exhausted, unless "heads" are raised at their outlet, to retain a quantity from the autumn and winter rains equivalent to a year's demand.

All our companies should be compelled by Parliament to draw their supplies from artificial lakes. All our manufacturing towns are situated within a moderate distance from mountain ranges, where lakes, ranging from six to eight miles long, could be formed by a "head" of from 100 to 150 feet high. The cost of these heads, according to a *Times'* correspondent, would not probably exceed £1,000,000 or £1,500,000, and the aqueduct not more than £20,000 per mile—small sums when the importance of the subject is considered. The metropolis is large enough to afford a larger cost of conveyance. The gigantic tanks artificially formed in Ceylon would give our hydraulic engineers some idea of what will shortly be required for our increasing population. But a proper method should be adopted in constructing dam-heads. The bursting of the Holmfirth and Sheffield reservoirs was really owing to the want of proper consolidation of the head. The modern way of forming dam-heads is by tipping waggon-loads of earth weighing not less than half-a-ton—generally a ton. Of course, these large masses of earth take years to consolidate. The earth should be carried in baskets, upon the head, the gangs of carriers to be so arranged that each quantity, after it is thrown down, should be trodden upon by the whole gang. This may appear, at first sight, a very expensive process; but it has been found the cheapest and most expeditious way of coaling the mail-packets in the West Indies, where from fifty to one hundred tons per hour are put on board the mail-boats, carried on the heads of the "coloured ladies," who often continue the work through the whole night. At any rate, means must be taken to consolidate the mass more effectually than at present.

Such are the hints suggested to us by the rainfall and floods of September; and we apprehend that their importance will recommend them to all concerned, if not to the nation at large, which is certainly very deeply interested in the matter, in all its bearings.

Finally, we had better make up our minds to expect another wet year, and provide against the consequences by directing our attention to the roots and green crops. These wet years cling together like drops of water; they rarely come single—thus, beginning in 1827, they lasted to 1831, or rather to 1833, just seven years, more or less. In no case has a year greatly in excess been followed by an average or good harvest rainfall. May the next prove an exception to the rule!

MIDLAND FARMERS' CLUB.

AGRICULTURAL LABOURERS AND SERVANTS.

A meeting of this club was held at Nock's Hotel, Birmingham, on Thursday, Sept. 27; Viscount Sandon in the chair.

The Rev. R. W. ESSINGTON read a paper on "Agricultural Labourers and Servants." After pointing out that the fact of the price of farm labour rising and the supply falling off had long been evident to both landlords and tenants, and was beginning to dawn on the minds of the labourers themselves, Mr. Essington showed how the extension of trade and manufactures, and the opening of vast emigration fields, had led to this state of things; and this being so, it would appear that higher wages and better wages might turn the tide which was flowing from the rural districts to the towns and to thinly-peopled countries. But the question arose, could farming be made to pay a fair rate of interest on capital with such an additional expense imposed upon it? After dealing with the hypothesis of farming being carried on from principles of philanthropy, the rev. gentleman expressed his opinion that it would be carried on for lower profits than other pursuits on account of its interesting character inducing many to engage in it, and an overstocked trade could never be a very profitable one. But it was worthy of consideration whether higher wages and improved cottages would diminish the farmer's profits, as to which he said: That there is any saving in paying a man whom one employs less than enough to keep up his strength, no one in these days will venture to assert. There was, it is true, something to be said even for this practice in the times of the old poor-law system, when the parsons and the ratepayers were obliged habitually to make up the deficiency in wages by out-door relief. But this state of affairs, fortunately or unfortunately, belongs to the past; and now a man who does not earn enough to support himself and his family will not get what he wants elsewhere, and consequently will be underfed. But does the present rate of wages meet these requirements of a man, making all allowance for cottage lowly rented, for allotments, for piece-work, for harvest-work, and even for doles—the most wretched supplement for wages? Are 10s., or 11s., or 12s. a-week sufficient to keep a human frame in vigour and to find food for a family too young to work? Would 16s., or even 18s. a-week be too much, with meat at its present price? But there are two ways of replying to this argument, the first being that it is essentially unsound, and contrary to all commercial principles, to give more for anything, including labour, than you are obliged to give; the second, that men not only do live on 10s. a-week, but also find money for the public-house out of it, and that if more were given the surplus would find its way there, and nowhere else. He admitted that the first of these reasons looked plausible, but it was open to wide exceptions, and no one would think it wise to refuse corn to a horse because hay without corn would do, whilst the horse which was stinted not knowing that its master stinted it acquired no ill will towards him on that account; but the labourer did know that it was his master who kept down his wages, and was likely—acting on the same principle of giving as little as one is obliged—to give as little of his labour as he could for his wages. Again as to drink, was it not possible that poor food, especially the substitution of bacon for fresh meat, drove a man to drink? Coming to the question of cottages, Mr. Essington observed that the house accommodation of the ordinary workman, whether in town or country, was simply shocking. After noticing the mixing of the sexes, he said: Nor is the want of space by any means the worst feature. The low thatched cottage in some romantic lane smiles pleasantly no doubt on the passer-by, especially if he be an artist. The honeysuckle in front smells delightfully no doubt; but just turn to the back door, and sniff the mixen which is close to it. The little window lying half-hid in the roof looks charmingly picturesque; but only go into that low angular chamber, which it does not light, and then say what you think of it. A man who has a house of this sort, with the ground floor, as the old song says, and a cross wife (for such dwellings are very aggravating to females) and half-a-dozen children, and no beer of his own brewing—thanks to the abominable Malt Tax—and nothing but salt meat, of course ought not to be tempted into the nearest public-house; but, nevertheless, he is very likely to be so tempted, and I need not say that his visits there will not tend to make him a better workman, nor to raise the rate of profit which his master may wish to get out of him. As to the distance of cottages from the farms, Mr. Essington thus explained the cause of the existing state of things: My Lord Deadlock, so let us call him, owns an entire parish in which he and the farmers (through whom he at least in the main pays his poor rates) reside; which being the case he takes care that no one who is likely to require parochial relief shall settle within his borders, the result of which arrangement is that all the farm labourers employed in Deadlockdale live in St. Lazarus-among-the-Thistles, which is three miles away from several of the farms, and the further result is that while the poor-rate in Deadlockdale is nominal and scarcely goes to the poor at all, the rate in St. Lazarus-among-the-Thistles is 2s. 6d. in the pound, and the still further result is that while Lord Deadlock on £20,000 a-year pays—tenants and all—something like £50 a-year, the Rev. Telipher Popper on an income of £500 pays half as much as the whole Deadlockdale following put together. Happily, however, the duty to act in this shabby, not to say dishonest, manner has been curtailed, and it is to be hoped that it will disappear entirely by the transference of the burden of maintaining the poor, not only from the parish to the union, but from the local rates to the general taxation of the country. As to the question of how labourers were to pay the rent of improved cottages, Mr. Essington said an increase of wages would go far to solve the difficulty, but apart from that it does not pay to have cattle, and it answers far worse to have men, badly housed. Bad cottages tend to bad habits, and these to the pothouse, and that to the poorhouse and the gaol, which cost landlords and tenants far more than good cottages would. Passing from these main points he went on to the question of parochial schools, and acknowledged that there was truth in the statement that education tended to raise the price of labour and to diminish the supply; for a lad who could read and write, and had heard of Birmingham, and even perhaps of America, and knew how to get to these places, would be less likely to stick to his parish than one brought up in negro-like ignorance, which, however, had its disadvantages. But schools existed, and could not be put down, even if anyone thought it desirable; and he expressed regret that the farmers did not take an interest in their management, did not see that they were sensibly conducted, and did not endeavour to make them the means of supplying their wants in the shape of servants and labourers. Again, the workhouse school, of which the tenants, as guardians, had the management, might be made the means of supplying labour; whereas the children were put to any trade except farming, which, he reminded his audience, wanted learning as much as any other business. The rev. gentleman touched with much force on the use of bad language to servants, and said he believed that this was often the deterring cause of labourers leaving the country; for, as he said, a man, in spite of geography in the abstract, and railways or steamers, which are its concrete exponents, clings to the spot where he was reared, to the school where he learnt his book, the church where he worshipped his God, the lane in which he first hunted for birds' nests and afterwards loitered with his sweetheart; so, although he hears of broader lands beyond the Atlantic sea, the pastures of Ohio, and the cornfields of Erie, he turns a deaf ear to the charmer, for he thinks of sea-sickness, or possibly of the sea-serpent—he finds that "there are fevers and wild beasts in them 'ere furrin parts, and that no beer worth havin' is to be got," so he concludes to stay at home; but then, just as he has made up his mind to adopt this course, and has accordingly joined the sick club of Stick-in-the-Mud, the angry oath of some unreasonable employer, or, still worse, of his bailiff, sends him off to the uttermost ends of the earth. That this practice of cursing, however, is not universal of course I know; but how common it is! Indeed, I believe that no one, except a very raw recruit in the Yeomanry, or a merchant seaman, or a man who will ride into the hounds, gets so frequently sworn at as a farm labourer. There seems, in fact, to be a sort of impression with respect to him, as there is with respect to a bullock-team in Australia, that a volley of oaths is, under certain circumstances, the only mode of leverage. It is said that our colonial bishops so far concede to the prejudice as to walk on rapidly when their teams happen to get stuck in a gulley. The paper went on to censure the practice of those who, whilst they never allowed their labourers to forget that they have a master on earth, appeared never themselves to remember that they had a Master in heaven.

In the discussion which followed, there was a general disclaimer of the practice of swearing being common amongst farmers, and a very general agreement with Mr. King, who denounced beerhouses as the great curse of the rural districts.

Mr. **Masfen** said the rate of wages paid to agricultural labourers in his district was 16s. a-week, and 1s. extra for waggoners; and he maintained that though colliers and iron-workers got more wages, the agricultural labourer who was employed all the year round and was not discharged in old age was really now in a better position.

The **President** observed that it was not quite clear that the rural population was diminishing, for his experience of villages in Staffordshire, Gloucestershire, and Lincolnshire was, that a cottage was very seldom vacant for a fortnight, which was an indication that the population was not deserting them. He thought a good deal of the scarcity of labour arose from the improvement in agriculture leading to the employment of a larger number of labourers on the farm. Within the range of his own experience—but he did not know whether that was generally the case—the practice which formerly prevailed of the young farm labourers living in the farm-houses was discontinued, and he thought it very likely that these young men, disgusted with the want of accommodation in their parents' homes, would be rather tempted to resort to the public-house. Again, with regard to the distance men often lived from their employment, it was only fair to say that this was a most crying evil in the great towns—in London, Manchester, and Liverpool, and especially in Paris, where the Emperor was striving to find a remedy for it. From his own knowledge of the state of things in the East of London, with which he was familiar, he could say that the evil—that of crowded and unwholesome dwellings—was felt there to a very great extent. He quite agreed that it was most desirable that landlords should find good cottages for their labourers, but it must be remembered that this was not required of any other great class of proprietors, and that when a few manufacturers here and there, as Sir Frank Crossley, did so, it was regarded as a ground for special admiration and praise. Still, the necessity for better cottage accommodation was evident, and landlords must more and more provide their tenants with suitable houses for those necessary to cultivate the soil; and he hoped that in such cottages three bedrooms, so as to separate the sexes of the children, would be the rule, as it would tend very greatly to elevate the class among whom, considering their frequent domestic circumstances, the amount of modesty and purity to be met with often put to shame those in higher positions. With regard to the low profits which it was stated arose from farming, he must say that as far as his experience went he questioned whether farming was so very bad a business after all. He knew instances where men had taken farms with a small capital, and who were able to put their two or three sons on farms in a position equal to their own. He presumed the capital necessary for that must come from somewhere, and he rejoiced to see a family spreading its roots around a parent home; but it did throw a little doubt on the statements that farming was so very unprofitable a business. The great point was that no man should take bad land at any rent.

Mr. **Osborn**, in moving a vote of thanks to Mr. Essington for his paper, urged the great proportion of landlords providing cottages on the farms.

Mr. **Hayden** said the way and the only way to retain the labourers in the country was to raise their wages.

Mr. **Lythall** said he was at the present time in want of a man at 16s. a-week, with a cottage rent-free, and who could get £2 a-week at harvest-time; and he said men who worked piece-work on his farm, and he encouraged that all he could, got on an average £1 a-week. One means of encouraging good labourers to stay was by giving them an interest in their own success, as by paying a shepherd extra for all lambs beyond a certain number from each ewe, and when that could be carried out it was very beneficial. Another important point was the evil of the present system of paying men equal day-wages, instead of varying their wages according to their skill and value in other ways.

Mr. **Essington** having replied to the vote of thanks to him, a similar compliment was paid to Lord Sandon for presiding.

Previous to the Discussion Meeting a resolution was passed directing that a subscription should be sent to the Chamber of Agriculture.

THE CLERGY AND THE LABOURER.

At the meeting of the Northampton Agricultural Society—

The Reverend T. **Whitehurst** said he was sorry there was no other clergyman present to represent the profession. He considered that the interests of agriculture were intimately connected and bound up with the interests of the country clergy. In many ways this was the case. They might think that while they were improving the methods of farming they were doing a certain work that helped to fill their own pockets; but it was not only so, for they were raising the condition of those below them, the labourers, with whom the country clergy had much to do. Every new implement that was introduced into farming operations required a certain amount of intelligence to use, therefore they had directed their attention to the education of the labourer, and thus after having acquired the *mens sana*, the sound mind, let them hope that now the attention of landowners and occupiers would be turned to giving the labourers healthy cottages, that he might have the *mens sana in corpore sano*—that he might have strong muscle as well as a well-educated mind. They had no fear of the labourers breaking their machines lest they should be put out of work. It was not a long time since it took six horses to scratch as much fallow as could now be done by two horses. The number of horses and men had been increased of late years in spite of the alteration to which he had alluded. He therefore thought that, as country clergymen, they were much interested in the improvements that had taken place in agriculture, as they tended to improve the level of the labourers; and everything that accomplished that object tended to lighten the burden which was cast on the shoulders of the clergy. It would then be evident that the success of the agricultural interest was intimately connected with the success of the ministrations of the clergy.

Mr. W. **Bearn** said he wished to say one word of a practical character, to the farmers present, with regard to the weather, or rather the recent exposure of the crops. He believed that in this district they had been exposed to two or three weeks' rain. (Several voices: "Four weeks.") He wished, as a practical farmer, to make one observation as to the setting of shocks in the field. Though but a humble thing, at least it was valuable. He went through the corn of a gentleman that was present in that room, and who would bear testimony to what he was about to say. The corn had been exposed for some two or three weeks' rain, and he called this gentleman's attention to the manner in which some of the shocks were set up, some being set up firm and well, whilst another part was set up in a loose manner. The sheaves required setting up at a certain angle, of how many degrees he could not tell, for he had forgotten his mathematics, and then the rain would run off without any injury being done to the crops; indeed, sheaves set up at a proper angle would bear almost a deluge of rain. If any of them had any crops out, and he hoped none of them had, they would find that the sheaves that had sustained the most damage were those that had not been set up, but had been loosely thrown together. It was well worth their while, as agriculturists, to pay attention to the way in which the sheaves were set up by the men.

Mr. J. L. **Stratton** said: If they considered the education the agricultural labourer had received, they must admit that he did his work in an unexampled excellent manner. The labourer had been taught very little, not being able in some instances even to read and write. If they gave him a quantity of seed wheat to sow, he would do it in such a manner as would show very considerable thought and calculation. There was a great deal more skill required in the ploughing, draining, and hedge-cutting than they were apt to think. But the labourer attained a knowledge of these things without any special course of education. The knowledge came to him as a matter of course, or by experience, but they had no school in which to teach him these things. He quite agreed with Mr. Bearn's remarks about the setting up of the sheaves, but how was the labourer to know how to do it if he was never taught? Some of them could show their labourers how to do it, but there were many labourers who could do it better than their masters. In the North, night-caps were placed over the shocks, so that the rain fell off. He thought the labourers had not been considered in a proper light, and they had been neglected by the landowners of England. It was a shame that they should be so neglected; and he felt it more strongly when he saw these poor fellows, after a hard day's work, walking home in the rain, perhaps some three or four miles, because landowners would not put up cottages for them near to their work. It was not the farmers' fault, for many of them would only be too glad to have it so; but he was sorry to find that in numerous instances they had no labourers on the spot. Many landowners allowed the work-people to reside in another parish in order that they might be saved the rates of their own parish. They ometimes met with the landed proprietors, who came and alked at these meetings, telling them about what they did for he farmers: they did not tell them what they did for the laourers, who were, for lack of cottages, obliged to live a distance from the spot where they worked. That was not the way they ought to be treated. There was no man on the face f England so contented as the agricultural labourer. They ever heard of strikes amongst them, although sometimes a abourer would ask for a shilling extra per week. Take them s a body, they were the best disposed of any class of the working population in England, and he was sure it was not only in he power of the landlords, but also in the power of the farmers, to improve the labourers' condition. He thought the first hing the farmer ought to do was to try to induce the labourer o keep from the public-house. When he attended the magistrates' meetings there were numbers of men who were brought p for being drunk and riotous; they were fined 5s. and costs, r something like that, and if unable to pay were sent to rison. That money was every bit out of the farmers' ocket, for when the man returned to his work he was not in a condition to do his work so well. He was pleased to see the reading-room in the Towcester town-hall, and he did admire the town for it. It was a very difficult thing to establish in some parishes, but it was one of the best things they could do in endeavouring to elevate the condition of the labourer. By establishing a reading-room they gave the labourer an inducement not to go to the public-house, to which it was very natural he would go. He, perhaps, had an uncomfortable cottage, a wife, and may-be half-a-dozen children, who bothered him; and for the sake of a comfortable seat he would go to the public-house, where his drinking would probably begin at half a pint, from which he would be induced to take more; then the next morning he would be unfit for his work. But if they gave him a reading-room it would improve his mind as well as keep him from the weakening influence of drunkenness. But let them not put literature into these reading-rooms that would have a tendency to corrupt his mind. Let them give him that which would keep his tastes as pure as they are now.

Mr. R. **Doig** referred to the observations made by Mr. Bearn about the setting up of shocks, and said he was the unfortunate individual through whose exposed corn he had walked, and said that in Ireland it was a practice in some parts to use "night-caps," which were tied on so that they were like a roof. He had seen wheat stand thus covered for six weeks without taking a drop of rain. He thought, however, that they could not do so in this county. Then, with regard to the labourer, he thought Mr. Stratton did not know him as well as they (the farmers) did, although he (Mr. Doig) would not wish to detract from that gentleman's kind words. But he could not help thinking that, whatever reading-rooms were established for the agricultural labourers, it was not possible for a man, after working ten or twelve hours in a-day, to take up a book and read.

Mr. **Stratton**: He goes to the public-house. I want to keep him out of that, and put him into a reading-room instead.

Mr. **Doig** did not think it could be accomplished. He could give examples of men when they had had beer. (A **Voice**: And a little wine, too). They would not go and read. All they wanted done to benefit the labourers was that the landowners should get proper accommodation for the labourers. They would never have the public-house to drop into on their way home, and would therefore lose the temptation to go in and get "boosy." Let the men have cottages as near the farms as possible. Until that was done, the labourers would never be in the condition they ought to be in.

Mr. J. M. **Vernon** should like to say one word with regard to the question of the labourers' cottages which had been introduced. He could not see why the poor man's cottage should not be made the most attractive place in the universe to him. If their homes were not attractive they sought society elsewhere, for that happiness which they could not find in-doors. If they placed the poor man in the same position as the upper and middle-classes as regarded his home, he would not go away from it. There was no place so dear as a poor man's cottage, which was dearer to him than a queen's palace or a nobleman's mansion. Make the home happy, and they would not have to make those complaints about the poor man's habits.

DEER v. SHEEP.—A correspondent of the *Economist* has the following remarks on this subject: "In an article which appeared in your columns a short time ago, the writer ventured to express an opinion that the maintenance of a deer-forest was a form of unproductive expenditure no more culpable or injurious than most other objects of unproductive expenditure. It seldom happens that, when people spend money upon things the only result of which is health or pleasure, we are able to show with any approach to exactness the cost of their amusements. This, however, I think may be done with respect to deer-forests, and proceed to show what appears to me the maximum of national cost which they involve. I need hardly point out that this cost—in other words, the loss to the community—consists of the annual rent which the land would produce if used for sheep-farming, reckoning only what would be paid as rent for the land in its natural condition. It has been stated in your pages that the deer-forests of Scotland occupy two millions of acres. I assume this to be correct, although I believe the extent to be overstated. I allow nothing for the deer or other animals of chase which may be killed, although of course they must be of some value. I also suppose that not a cow, bullock, or sheep is kept upon any portion of the land. Now, then, what is a fair rent for the land, unimproved and in its natural condition? It is mostly bog, mountain, and rocks, the soil of the poorest quality, and the climate ungenial and rude. Do I not value liberally in putting the rent of this wild land, in its natural state, at one shilling an acre? If I am right, the rent of all the deer-forests in Scotland would be £100,000 per annum; and that sum is all that is lost to the state, if, indeed, a simple item of unproductive expenditure can be said to involve a loss to the state, consequent upon their maintenance. I need hardly mention to the readers of the *Economist* that the profits arising from sheep-feeding instead of deer-preserving would be the result of a large outlay of fixed capital in building houses and making roads, yards, &c., &c., and of circulating capital in buying sheep, paying shepherds, &c., &c.; that the returns yielded by this capital would not exceed the ordinary rate of profit; or that the necessary capital could only be obtained by its abstraction from other employments equally profitable. Of course, the owners or occupiers of deer-forests spend a good deal of money, besides the rent, in paying keepers and gillies and feeding dogs, as well as for their own living; but it can hardly be pretended that, if all deer-forests were put an end to, such people would be obliged or induced to spend their incomes productively. As some indication of the proportion borne by the expenditure on deer-forests, when compared with other forms of unproductive expenditure, it may be mentioned that, many years ago, the disbursements of the English subjects travelling or residing on the Continent, which must be considered almost unproductive, was valued at twelve millions per annum. It is probably now far greater. It may be not improper to state that the writer of what precedes never saw a Scotch deer-forest in his life. Now a few words on the opinions held by Mr. John Stuart Mill and Mr. Leone Levi as to the rights and obligations of the owners of land. I agree with them that the Legislature is fully justified in dealing with landed, as with all other property, in the way which it may deem most conducive to the public good. I will add, however, that in a country like England, where land has for many centuries been bought and inherited, with an absolute right to use or misuse it at discretion, any interference with this right, without ample compensation, would be an act of gross injustice."

"THE QUESTION OF WHEAT IN 1866."

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

French agriculturists were much perplexed at the time of the harvest of 1865, in consequence of the low price of wheat. At the outset the great majority of the landowners attributed the general fall to the abolition of the sliding-scale and to the free importation of foreign wheat, made legal by the law of the 15th of June, 1864. Great suffering was then predicted, and it was even said, that if it lasted we should witness the gradual decline in the value of landed property, a prediction which, I trust so far as we can see, is not likely to be realized.

It is not the first time in France, where there is so much talk of liberty, that the experiments of liberal legislation have been denounced. Under the old Monarchy we saw the laws of 1763 and 1764 give way, in consequence of a bad harvest. The dearness of grain was attributed to the newly-installed liberal policy, which lasted only six years, just a century back. Thus the free policy, which was accused of having produced the advance in 1767, is now accused of having caused the fall of 1865.

Is there not a fallacy in these accusations against liberty, and in the demand for protective laws, to which the power is accorded of regulating the seasons and nature of things. Liberty being always in proportion to the enlightenment of man, may we not conclude that we are more enlightened in the present day than our predecessors in 1767?

In opposition to the authors who have written against the new legislation, some economists have maintained that the low price of corn was wholly owing to the abundant harvests of 1863 and 1864. I have no wish to discuss the opinions of either side, or to quote the statistics of importation and exportation: "No one can assert that scarcity is to be preferred to plenty." This is wholly beside the question. As there have been several periods in our time, when the price of corn has descended as low, and even lower, without producing so much anxiety, there must exist some more potent cause for the present agricultural difficulty.

It appears to me that we are not now concerned with a momentary crisis, a passing disturbance, which will not be thought of next year. French agriculturists are intelligent: they have an intuitive idea that what is now taking place is of unprecedented and lasting importance. They perceive the element of uncertainty which must be taken into account; and there must always be some degree of hesitation, however courageous, in dealing with a new influence. This is the agricultural improvement at which we have all laboured, and which comes in due time, the natural effect of our efforts and our combined industry—a fresh step attained in man's progress towards the amelioration of his earthly lot.

THE EARLY AND MIDDLE AGES.

Man, from his first entrance into the world to the present time, has made a constant and invariable progress in his aspiration towards the improvement of his physical and moral faculties and the amelioration and diffusion of human life, and his object can only be obtained by the aid of agricultural progress. The wealth and power of a nation are in proportion to its population; its population is in proportion to its means of subsistence; and these are in proportion to the perfection of its processes of rural economy.

Uncultivated lands, virgin forests, are at first only peopled by poor savages, forming little isolated tribes, obliged to subsist upon herbs and the flesh of animals taken by hunting. From the fear that their means of subsistence may fail, these tribes make deadly war upon each other, in which the weakest are exterminated.

But in these wars some hardy warriors succeed in making themselves masters of a wide extent of territory. Having thus attained to some degree of security, the women and the old and weakly men make the first attempts at agriculture. From these attempts may be dated the commencement of a reserved stock of provisions, the foundation of our present wealth.

However, war, robbery, and slavery have for many long years afflicted humanity. The tillers of the land, at first slaves, through thrift and the progressive development of their intelligence become serfs; then *coloni*, free men of different classes; and lastly landowners. With each step taken in the attainment of freedom, there is a corresponding progress in agricultural industry. Even the feudal institutions were, in the beginning, favourable to the amelioration of the condition of the people. Under the protection of strong castles, the habitations of the tillers of the ground were comparatively safe; and the priest, raising his voice in the name of God, preaching peace and charity, softened the manners of men and disseminated the first elements of education. This was the time of the founding of the first villages and towns.

MODERN TIMES.

Whenever populations increase and grow wealthy, they experience new wants; and for the satisfaction of these wants, attention must be given to agriculture. Agriculture can only respond to these wants by having entire freedom in working.[*]

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[*] It must be understood that the word "freedom" is here used as implying freedom for industry, in the widest sense the faculty which permits a man to use all his physical power and his intellectual force without being restrained by a superior, or by artificial hindrances. The agriculturist will

Thus we see that, from the day in which primitive man learnt the first rudiments of agriculture, each progressive step was preceded by an extension of liberty, to be followed by an increase in production.

We can follow these steps in regular order: the savage, the slave, the serf, the colonus, the métayer, the farmer, the landowner. In proportion as man has become free, he has been able to give full play to his productive faculties.

Let us here notice that the constant aim of humanity is to better its moral and material condition on the earth. The landowner, living peacefully in society, furnished with all that is needful to his existence, and having abundant leisure for study, is the representative of the highest state of civilization at the present time.

But the number of men who have attained the rank of landowners is still very limited, and there is not one of them who, in the present state of society, does not find some check upon the full exercise of his productive faculties. Of course, I do not now speak of natural obstacles, which will always exist to a certain degree, although man is overcoming them daily. I speak of the artificial hindrances, transmitted to us by former generations; necessary perhaps in the state of society in which they were imposed, but which in the present day arrest the progress which our generation ought to effect. A very important part of this progress is involved in the law of distribution, by which the wants of the ever-increasing population are to be supplied. This activity in the growth of population is the most powerful stimulus to progress; and although France makes less progress in population than some of the nations which surround her, she must nevertheless obey the common law for the general good.

According to the statistics published, the population of France is only doubled in 128 years, whilst the average time in the other nations of Europe is once in 60 years: and among these figures Belgium gives 41 years. The position of France, therefore, is favourable for commencing a liberal movement, as she is surrounded by an increasing number of consumers. We are to-day in the same position with foreigners, through our frontier custom-dues, as our ancestors were with their home custom-dues and the prohibition of the importation of grain.

Liberty is ushering in new progress for agriculture, and raising civilization into a higher sphere. Formerly every tiller of the ground who attained freedom was forced to live isolated and to produce all that was needful for himself and his family, in the limited space which surrounded him; the agriculturist of the present day, having access to rapid and unlimited means of communication with others, can provide the best articles with little expense for transit.

Thus agriculture based on the immutable laws of nature and no longer restrained by the arbitrary laws of man, will be able to respond to the most numerous wants. Doubtless these changes cannot be made without some grievances: but they are inevitable; and is it not better calmly to study their different phases, and to endeavour to pass through them safely, rather than oppose their progress by ineffectual obstacles? Everything in this world is full of change, and no one can imagine that agricultural industry as it has existed during the last fifty years will revolve for ever in the same circle.

Being myself a clearer of land, I announced long ago the increase of produce which these cleared lands and energetic agriculture would bring into the market. Since that time our produce in wheat has more than doubled, and now exceeds 100 million hectolitres, and we shall not stand still. There may be bad seasons, but on the whole the produce will increase.

This increase in the growth of wheat in France is in accordance with the laws of nature. In the first place, the climate is favourable to the plant, at an average price of 20 francs the hectolitre* the majority of growers would get a profit, even under the present conditions of hand-labour and the letting of lands; at this price, and even lower, farmers prefer that grain to all others. We must take the straw into account, which is seldom spoken of, but which throws weight into the balance. Wheaten-bread is more and more made use of in this country. I know country people who will not make any use of rye. Farmers, through foresight, or from the fear of a bad season, take care to grow more wheat than is actually required, so that there is generally a surplus for sale. In consequence of the improvement in cultivation the yield per hectare is increased; and lastly, new lands are constantly brought into cultivation. If we bear in mind all these united causes, and the impossibility of changing the routine in a country where more than half the people live by the cultivation of the land, we shall see that a market is what is chiefly required. Economic science teaches us that the great question must be looked at from the farmer's point of view; it is the only way to judge for the present and the future.

The Government, then, has shown its enlightenment by inspiring liberal ideas, and providing for the future by the extension of markets for the consumer. But this liberal movement will be incomplete if it is not followed by other measures granting to agriculture a free use of all its resources. Among other obstacles which it finds in its path I shall specially mention those home-dues called *octrois*. The octrois bring in about 180 millions yearly, and it is the agriculture of the country which pays this sum. It has been said that it is paid by the town consumers, but this fiction is easily detected. The city consumers merely pay the price of the purchase, and the octroi is a dead loss to the producer, who, without noticing the cause, would sell the produce to the extent of 180 millions more but for the tax.

Each time that the price of any produce rises, the number of buyers diminishes fatally. This is a serious question for the future, which requires a speedily solution, for it conceals war in the folds of its mantle.

In the same connection we must not omit mentioning the rise in the interest on money-loans as a cause of perturbation. The absence of agricultural credit on the one hand, and the growing increase in the rate of interest on the other, are obstacles which doubly hamper the operations of agriculture. Through the want of credit, the grower is prevented from moving into the new conditions created for him. Through the rise in the price of money all industry suffers. When these two causes act together upon a nation, the growers diminish on all sides, a void is caused, and the nation grows poor.

The agriculturists have of late been urged to decrease their growth of wheat, to change their soil to cultivate other crops, to produce cattle, milk, butter, poultry and eggs. This advice is excellent, but it is only part of the question; for with the exception of wheat the rest is burdened with heavy tolls, and in certain towns it is still enforced that the wheat should be sold in a specified place and nowhere else; that it should be measured by special officers without any power of refusal on the part of buyer or seller. Must we not fear that the efforts of agriculture will be turned against itself by demanding new taxes? According to M. Léon Faucher, it is by crushing down the peasants under the weight of the *taille* and *corvée* that the Old Monarchy desolated and depopulated France; and it is by suppressing the taxes which encumbered food-products that Sir Robert Peel made living easy in England, and spread comfort among the labourers of his country.

SUMMARY.

The whole history of mankind bears witness to the fact, that at whatever period an increase of liberty has been attained, agriculture has in like degree made progress in improved methods of working and increase of produce. No industry has more need of freedom than that of agriculture.

Agriculture is subordinate to the invariable laws of nature, and certain limits being fixed, it can with profit grow only the produce fitted for these limits. Whilst manufacturing industry places its workshops under cover, regulates its temperature, and works upon dead material, the agricultural industry is fixed under the vault of heaven, with a temperature which it cannot regulate, and works upon living matter.

The question being thus stated, it is easy to understand why freedom exercises so great an influence upon rural operations. The agriculturist, who finds himself face to face with nature

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make progress in proportion as he is free, whether it be in cultivating the plants which suit his land best, or in making exchanges for his own interest without foreign intervention.

[*] This is about the average for the last 65 years. It may be objected that the standard is not the same as it was: wages have increased, as well as rent and taxes. We reply that the grain has a larger yield, and that the new processes of modern agriculture have brought to light economical combinations hitherto unknown. Whence we may consider the balance as equal, which is probably the reason that wheat has a uniform price.

and living matter, all the laws of which are immutable, needs the fullest liberty of action. Every intervention of human power opposed to these laws is a fatal obstacle to the development of agricultural industry. Every time that legislation by duty upon exportation and importation, arbitrary taxes, increased rate of interest, heavy imposts or other irrational measures disturbs the natural progress of agricultural enterprise, it stops production.

In our time no one can venture to assert that it is a benefit to check production. But it is said that the French agriculturists produce too much wheat. There may be two opinions about this; one thing is certain—the growth of wheat in France has not yet reached its limit; it will increase daily, both in extent and in yield, for the plain reason that the growers find profit in it. We must not reckon, then, upon any lasting reduction, even supposing there may be a temporary change, the effect of a crisis.

If among the French agriculturists there are any who cannot produce wheat at the same average price as the rest, they will naturally inquire into the cause of their want of success; and they will find them in their methods of operation, or in the general economic laws of improvement. These inquiries will necessarily lead to the alterations which will ensure more durable and real progress than any new law for a sliding-scale.

I foresee what an immense boon complete freedom would be, as each agriculturist would be induced to consult the benefit of the whole community by devoting his land to the produce which it could supply most abundantly, and at the lowest price, provided at the same time that new taxes were not levied at each step in advance, making it impossible to accumulate. This would be the solution of the difficult problem of wages rising with cheap living, which ought at least to be tried, after all the fruitless attempts that have been made in an opposite direction. But human life is so ordered that we only attain the simplest proposition after having long moved in a vicious circle.

If we wish to see the effect which liberal measures can produce: in 1824, coffee paid on landing in England 1s. from the colonies, 1s. 1½d. from India, and 2s. from foreign countries. Huskisson reduced these duties by one-half, and in ten years the consumption increased fourfold from 8 million pounds to 32 million. And many analogous cases might be quoted in the present day.

I think, then, that the French farmers who were disturbed at the low price of corn in 1865 have taken a false step in seeking a remedy for their losses in fresh legislation. All the tendencies of the age are to liberty and the diffusion of human life; and it will be a glorious retrospect for our generation, that of having inaugurated this era of liberty and freedom, in company with railroads, the cutting of the isthmus of Suez, and other pacific measures, all bound up with the same economic system. The certain result for agriculture is, that with liberty it will make new progress, larger profits, and will ensure the ease and well-doing of its successors.

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THE DISEASES OF CATTLE.

[The following remarks are from the address delivered by Professor SIMONDS, on the opening of the Session at the Royal Veterinary College, on Monday, Oct. 1].

Besides a general knowledge, there are few professions which require a greater diversity of special information than ours, although a far more erudite education may be needed by many. Among these requirements an acquaintance with the various systems of agriculture stand prominently forwards, for they have much to do with the health of farmers' stock. The diseases which prevail in heavy-land districts are almost unknown in light, and *vice versâ.* The system of farming necessarily depends on the character of the soil, and this in its turn is due to the geology of the district. If you ask me, Do we, then, require to be geologists? I answer, Yes, in so far as that science is connected with the soil and the particular substrata on which it rests. Beyond this the study may not be necessary, however elevating and ennobling when rightly used it may be. By way of illustration, look to the enervating effects of wet clay soils, and their connection with dropsical diseases, and, not unfrequently, with rot in sheep. Look also at the ill effects of sandy soils, deficient as they are in all the elements required to produce sufficient nutriment in the food of growing animals. There is yet another and important view to be taken of agricultural science in its connection with vegetable physiology, which is, that the present system of raising large crops from the soil by the use of artificial manures is probably productive of disease in animals. Plants may be brought into a state of plethora which will as completely unfit them for food, as animals similarly placed would be unfitted to undergo severe exertion without the occurrence of disease. Besides this, plethoric animals, as is well known, are more susceptible to the influences of all the ordinary causes of disease, and experience is proving that plants quickly forced to maturity are similarly circumstanced. It is vain to suppose that the health of animals can be long maintained when they are fed on forced or imperfectly developed vegetables. By these remarks, however, we wish not to be understood as objecting, in the abstract, to the employment of artificial manures, but rather to offer a caution against the too free and frequent use of them to such plants as are used in their crude state as food for cattle and sheep. The light-land farmer, again, not unfrequently brings into operation another cause of disease, especially under certain conditions of the atmosphere. The system which he of necessity adopts of manuring the so-called artificial grasses on the surfaces as a preparation for the wheat crop, frequently causes the sudden death of sheep when fed thereon. The reason of this is often not to be found merely in the amount of vegetable matter, or in the rapidity with which it had been produced. The cause, indeed, would rather appear to depend on the decomposition of the manure, and the modern view of decomposition will perhaps help to explain this, and show, at the same time, the relation which exists between veterinary science and chemistry. In a lecture recently delivered by my colleague, Professor Tuson, before the Royal College of Surgeons, he showed that until 1862 the ordinary theories of putrefaction and fermentation were accepted. At that time Pasteur gave to the world the results of his laborious and masterly researches on these phenomena, proving that putrefaction and fermentation were not purely chemical, but physiological processes, and that the chemical effects observable were the accompaniments, as results of so-called vital acts. Pasteur proved, by the most sagaciously contrived and carefully conducted experiments, that the atmosphere in most situations is charged with living beings, and that they are the true exciters or causes of putrefaction and fermentation. These organisms alight from the atmosphere, come in contact with dead animal and vegetable matter, and by a vital process decompose such bodies, and abstract and assimilate from them the elements which they require for their own nutrition and growth. At the same time the organisms increase and multiply very rapidly, and in turn become wafted from place to place, ready and capable to effect the decomposition of other quantities of dead organised materials. These living beings are known as *mucedines* and *bacteria.* "Now, when we reflect," added the lecturer, "on the nature of decomposition and fermentation, and the character and power of the minute beings which give rise to them, the question naturally arises in our minds—May not certain of these minute but formidable creatures, or their germs, or both, which can be detected in the atmosphere, and which, therefore, are being constantly inhaled by animals, be the excitants or aggravators of some of the well-known epidemic and other diseases? On inquiry we shall find that, although the evidence in this direction is as yet neither abundant nor conclusive, we have still sufficient ground for believing that under peculiar conditions of the system certain maladies may be caused by the introduction into the body of the low forms of vitality to which reference has been made." In these remarks there will be found more than a gleam of light respecting the frequent outbreaks of that systerious and fatal disease known as splenic apoplexy. The microscope has revealed that the blood of animals dying of this affection is loaded with *bacteria*. May not not these have had their orgin in the decomposing manure? and may not the sudden death of sheep and cattle from splenic apoplexy, and its frequent extension from them to other animals on the farm, be explained by their being surrounded with myriads of these beings, while feeding on grasses manured after the manner to which I have alluded? Without referring at greater length to an abstruse subject of this kind, it may be remarked that every day's experience convinces us more fully that disease and death are often to be referred in another way directly to the food of animals. How could we expect otherwise, seeing that we have chiefly to do with herbivorous creatures, and that very many plants indigenous to the soil are springing up with their ordinary food, which possess not merely injurious, but positively poisonous properties. Instinct doubtless leads, as a rule, to an avoidance of these, or their baneful effects would be increased in a tenfold degree. The annals of veterinary medicine are replete with instances of this kind; and the pages of the *Veterinarian* often contain similar cases. It may be, perhaps, that Nature, ever-wise in all her operations, thus teaches that, by the free dispersion of such plants, we possess a ready means to the removal of disease in some of its varied forms, it being an oft-repeated axiom that what is food to one creature is poison to another. Be this as it may, we see enough in the circumstances to prove that botany is intimately connected with pathology, and has a direct bearing on the progress of veterinary medicine. Again, let us look at ordinary causes in the production of diseases; and we shall find a potent one in temperature and in the more common changes of the weather. Take the present season as an example; and I venture to predict that the large fall of rain which has taken place since the middle of the year down to the present time, associated as it has been with an elevated temperature, has laid, and is laying, the foundation for an attack of rot among the sheep. You who are familiar with the natural history of the liver-fluke know how this is brought about. The rot, perhaps, may be only partial; but on our undrained clay pastures and the feeding-grounds of our valleys it is sure to obtain. We have thus attempted to show that disease is often traceable to the nature of the food supplied to animals; besides which, that it is found to depend on the manner in which the food is prepared, and the way in which it is used. The education of the veterinary surgeon should be made, then, to embrace a knowledge of all these things. He should be as familiar with the habits of animals, and the influence of external causes over their susceptibilities, as with the nature of disease and the mode by which it is to be combated. Indeed, without a knowledge of the one, he can never excel in the other. I pass to more special matters; for, under existing circumstances, and standing as I do, it is to be expected that something be said on the still-great question of the cattle-plague. At this distance of time, it is unnecessary to repeat my convictions as to how the disease reached this country. Experience has only tended to confirm their correctness, and to show that it is to Russian, and not Hungarian or other foreign cattle, we must look as the cause of the evil. It is now a matter of history that the cows in two or three of the London dairies were the first known victims of the plague, and that the disease, which had been existing in one of them for a week, was recognised by me on July 4th. By this time the malady had not only spread in the Metropolis, but had gained a footing in no less than four places in Norfolk; and within a day or two afterwards it was recognised in Suffolk, Shropshire, and Devonshire. By the end of July, Berks, Bucks, Essex, Kent, Surrey, Sussex, Northumberland, Staffordshire, and Warwickshire were infected; and in most of these counties the malady was satisfactorily shown to have emanated from the Metropolitan Cattle Market. From this time the disease spread in all directions, the attacks gradually rising until they reached, in the week ending Feb. 17th, the alarming number of 15,706. The first Order of Council was dated July 14th, 1865; and from that period until now Order has succeeded Order, with more or less influence in checking the progress of the malady, and providing for the altered state of things arising out of its existence. The passing of the Cattle Plague Act was, however, the real cause of the diminution which has taken place, and which emboldens us to hope that ere long the disease will be entirely exterminated. For the first time in the history of the visitation, the attacks were returned as under 100 for the week ending September 1st, 99 being the exact number reported by the inspectors. On September 15th these had fallen to 58, when a slight increase again took place, the last official returns giving them as 67. It is to be remembered, however, that a focus of the disease still exists in the Metropolis, and in no less than eleven counties, ready to extend its area, if a withdrawal of the restriction were to take place. Among other important steps taken by the Government was the appointment of a Royal Commission, one of the members of which was the Principal of this Institution. The amount of information obtained by the Commission was considerable; and the publication of this, together with the minutes of evidence and the reports of the several scientific gentlemen engaged to investigate the pathology, treatment, and prevention of the disease, form the most valuable and complete history of the plague probably to be found in the world. The application of curative means was confided to the investigatinn of Professor Varnell and Assistant-Professor Pritchard; and the able report of these gentlemen I would recommend to your careful perusal, especially to those who still cherish the hope that a cure for the plague may be found. A few salient points in connection with this subject can only be referred to; and therefore for the present I shall content myself by quoting from the official returns the amount of loss which England herself, apart from other parts of Great Britain, has sustained. The total attacks are returned as 198,364. The animals killed (diseased) amount to 77,469; those which died, 90,412; recovered, 21,589; unaccounted for, 8,894; besides which no less than 38,295 have been slaughtered healthy, to prevent the spread of the malady. These figures are truly formidable; but they fail to show a tithe part of the distress and ruin which have been brought on hundreds of thriving and industrious farmers and cattle-owners by this dreadful visitation. To pass to Scotland. By the middle of last July the disease had been effectually stamped out in Scotland; and in consequence thereof an Order in Council, bearing date August 11th, was issued, suspending all restrictions as to the movements of cattle in that country. The Order set forth that—"From and after the 13th day of August, 1866, and subject to the further Orders of the Lords of the said Council, all the provisions contained in any Order of Council restraining or regulating the movements of animals within Scotland, or any part thereof, and all Orders of any Local Authority in Scotland made under or in virtue thereof, and all the Provisions contained in any Order of Council prohibiting or regulating the holding of markets, fairs, auctions, exhibitions, or sale of cattle within Scotland, or any part thereof, and all Orders of any Local Authority in Scotland made under or in virtue thereof, shall be suspended; provided that nothing herein contained shall prevent any Local Authority in Scotland, or the officer or officers appointed thereby, from granting 'fat stock or store stock' licences, under the Order of 11th April, 1866, for the removal of cattle from Scotland to England or elsewhere beyond Scotland." Subsequent to the issuing of the Order, five cases were officially reported as having occurred at West Kilbride, County of Ayr. As may be easily understood, this supposed fresh outbreak excited the liveliest apprehensions that the disease might again gain a footing in the country. These were, however, quickly set at rest by further professional examination, Professor M'Call being ordered to specially investigate the facts of the case. This gentleman reported that the animals had not died of cattle plague, but from splenic apoplexy; an opinion which was coincided in by the inspector who had originally reported the outbreak, and also by other inspectors whom he had consulted. So keenly alive, however, were the Caledonians to the necessity of preserving Scotland free, that although an Order of Council was issued to prohibit the removal of stock from England into Scotland, the Highland and Agricultural Society, and also the Chamber of Agriculture, memorialized the Lords of the Council to suspend the great autumnal cattle fairs and markets. The memorial of the Highland Society set forth—1st, That the holding of lean and store markets for cattle should for the present be entirely suspended, and that especially Falkirk Cattle Tryst should not be held. That the directors had come to this resolution after communication with all the local authorities in Scotland. The memorial of the Chamber of Agriculture pointed out that the Order in Council of August 11th did not secure Scotland against reintroduction of the cattle plague from England, and urged that the transport of cattle from England should be fenced about with more stringent conditions as to licence, &c. The Chamber, moreover, "humbly recommended and earnestly urged upon their Lordships the necessity, under existing circumstances, of prohibiting all public fairs, trysts, or public markets for the sale of store cattle, unless such markets as may be expressly sanctioned by the local authority of the place where the same are to be held." These memorials were fully considered by the Lords of the Council, and an answer was returned to the effect that as both Scotland and Ireland were free from cattle plague, and as no cattle or sheep could enter Scotland from England, their Lordships did not see sufficient reason to vary or revoke their Order of August 11th. The Falkirk trysts consequently have been held, and without any injurious consequences; and from the date of the Order Scotland has been as free, with regard to movements of animals within her borders, as she was prior to the outbreak of the cattle plague. It appears from the official returns that the attacks in Scotland amount to 46,861, being 4,841 per cent. on the entire stock of the country. Of this number there died 28,088, and were killed 6,263, making a loss of 34,351. 10,707 recovered, and 1,803 are unaccounted for, the larger part of which may probably be regarded as having died. Scotland, too, has lost 13,444 cattle, which were slaughtered to limit the spread of the infection. The disease prevailed in Scotland for a year, the first cases being reported to have occurred July 18th, 1865, and the last on July 14th, 1866. We come now to Wales. It has somewhat singularly happened that, with the exception of two counties, no part of the Principality has suffered from the disease. These counties are Flint and Denbigh. The disease is said to have first visited Flintshire, and as early as July, 1865; but doubts may not unreasonably be entertained as to the correctness of this statement. Be this as it may, the malady was established in September, both in Flintshire and Denbighshire, and continued down to the third week of August last, when for the first time no cases were returned; Flintshire having suffered to the extent of 198 attacks and Denbighshire 81 attacks per thousand animals. Wales has since remained free from the disease. In the aggregate, 8,388 of the Cambrian cattle have been attacked; and of these 5,794 died, 1,180 were killed, and 1,117 recovered, leaving 297 unaccounted for. In Wales also 528 were also slaughtered healthy. The confinement of the disease to the counties named was doubtless due in a great measure to legislative enactments. To come next to Ireland. As may be easily understood, from the first appearance of the plague the greatest solicitude existed with regard to Ireland, should the disease unhappily extend to that country. Very early, legislative measures, far more stringent than those employed in England, were adopted to protect the cattle of the Sister Isle. For many months these proved fully effective; but suddenly, and totally unexpectedly, the disease appeared in the North of Ireland, at Drennan, near to Lisburn, County Down, in the month of April last. How the contagion was conveyed thereto has never been satisfactorily ascertained. By some it is supposed to have been taken from Scotland by drovers, whilst by others it is thought that its introduction was not altogether accidental. A fair was held about four miles from Drennan a week previous to the appearance of the disease; but none of the infected cattle had been taken there, nor were any drovers from either Scotland or England known to have gone into the parish. I am indebted to Professor Brown, who was specially commissioned to investigate the cases, for the following details of the outbreak: On May 13th, he states, notice was received of an outbreak of cattle plague in County Down, at a place called Drennan, about seven miles from Belfast, and three from Lisburn. On inquiry, however, it was found that the disease had existed there since April 8th, on which day a cow was attacked with plague on a farm belonging to John McKee. From this time other cases occurred on the following days—April 8th, 13th, 16th, 19th, 28th, 30th, May 3rd, 10th, 11th, 12th, 13th, 17th; the disease having extended during this period to three adjoining farms. Thus, from John McKee's it spread to W. J. Erskine's, forty perches away; then to W. McKee's, ten perches distant; and thence to Rea's, adjoining. The owners of these farms had assisted each other in drenching the sick animals, and in skinning and burying the carcases, not knowing the nature of the disease. From the same centre the malady likewise extended to McCartney's, at Cabragh, one mile and a-half from Drennan; and, after an interval of twenty-one days, namely, on June 7th, it was reported to have broken out at McKetterick's farm, half a mile from Drennan. The report was not received, as just stated, until June 7th; but on inquiry it was found that three animals had died, and been buried before the inspector was called in. On his arrival he found that two others were lying dead, and two more were ill; making, in all, seven animals which had been attacked. On June 13th all the stock on this farm was killed; and on June 15th a case occurred on Erskine's farm, whose cattle were in the next field. Professor Brown saw this cow on June 18th, and found all the symptoms of plague to be well developed, and likewise that the post-mortem appearances are perfectly characteristic of the malady. On June 20th, 21st, and 25th, the rest of Erskine's cattle were attacked. These were also examined by Professor Brown. No more cases occurred in that district, but on June 22nd he was called to inspect some cattle at Ballynasken, Co. Meath. Here he found one dead from plague, and another dying. This, with three others that had been taken with the disease, were at once killed and buried. On July 5th another case occurred on the next farm, and on Mr. Brown's arrival the animal was found to be dying. Eight others were on the farm, which were immediately killed and buried. No more cases occurred. No cause could be assigned for the outbreak in either of these instances, the poison, as in the County of Down, having been introduced in some mysterious manner. The arrangements for meeting the emergency were perfect. Cordons were drawn round infected districts, and strictly kept by the constabulary. All diseased animals were immediately killed and buried, and also every one that had been in contact with them. All persons going near the place were disinfected by the constabulary, and no horses nor vehicles were allowed to be taken out of infected boundaries. The entire number of animals exposed to the infection was fifty, and out of these twenty-nine were attacked, and either died or were killed, and twenty-one were slaughtered healthy. Nothing can show more clearly the propriety of the "stamping-out process" than this result. In it we have a parallel with what took place in France, where only forty-three animals, healthy and diseased, were sacrificed to the poleaxe, and the country freed from the plague. It is fearful to contemplate the distress which would have attended the spread of the disease in a country like Ireland, and at a time, too, when Fenianism was rife in many men's minds. Happily, we have been spared the scenes which would have followed; and heartily, therefore, may we congratulate the Government on the success which has followed the adoption of its exterminating measures. It may here be remarked that the process of destroying the germ of the disease, wherever it may appear, has proved equally successful in Belgium. This country, after enjoying an immunity from the pest for a period of fifty years, at which time the disease followed the track of the Russian and Austrian armies, received the malady from Holland in August of last year. The imports from Holland were at the time larger than ordinary, and it is known that some diseased beasts, supposed to have come from Rotterdam market, entered Belgium on August 16th. The affection gained a footing in no less than six different provinces; notwithstanding which, the energy displayed by the Government, as soon as it had correct information on the subject, quickly succeeded in exterminating the pest with a loss of only four hundred and fifty-five animals. The closure of the frontier against the importation of cattle and sheep, with hides, &c., from Holland, and of the ports against English cattle, have since then preserved Belgium free from the disease. Contrast with these facts the vacillating policy of Holland, and the desire to treat the diseased cattle, and you have a result which may be rightly termed deplorable. In South Holland, and Utrecht in particular, the disease still prevails to an alarming extent, and not only has no diminution taken place in the number of weekly attacks, but a positive and alarming increase, since about the middle of the summer. The last official reports which we have seen give the total weekly attacks from June 30th as follows:

June 30th	...	335	Aug. 11th	...	1,225
July 7th	...	597	„ 18th	...	1,135
„ 14th	...	526	„ 25th	...	1,379
„ 21st	...	776	Sept. 1st	...	1,643
„ 28th	...	971	„ 8th	...	1,849
Aug. 4th	...	989	„ 15th	...	—

The relative numbers in the three divisions, from Sept. 2nd to 8th, being as follows:

South Holland	Utrecht	North Holland
731	1,082	36

showing a material increase in each division. With regard to the way in which the disease was introduced into Holland, it is unnecessary here to repeat the particulars in detail. Sufficient to say, that its importation from England has never been denied, the cattle taking it being Dutch oxen which were returned to Rotterdam in consequence of not bringing a remunerative price in the London market. To whatever country we look, it will be seen that attempts at cure are invariably associated with a keeping-up of the disease. The mischief thus done is often ruinous to individuals, as well as injurious to the wealth of the nation. The counties which have suffered most in England, and in which the disease still lingers, are those where encouragement has been given to treat infected animals, and where the local authority has been otherwise lax in enforcing the law. Even now there are many advocates for treatment to be found. Indeed, it is to be feared that some practitioners are more solicitous in obtaining information relative to remedies than to investigate the laws that govern the spread of the malady, or the changes that are produced in the organism by the *materies morbi*. Cheshire is a remarkable illustration of the truth of the remark that the loss is always in proportion to the attempts to keep alive plague-stricken animals. In this county no less than 23,742 cattle have been killed diseased, and 4,660 healthy; 32,729 have died, 3,147 are accounted for, and 7,967 have recovered. Ruin has been brought on numerous farmers and others, and the effects on the whole county must be felt for many years to come. No less than £300,000 will have to be borrowed to compensate the cattle-owners. This sum has to be repaid in thirty years, and it has been calculated that it amounts to twopence in the pound on all the rateable property of the county during the whole of this time. Many of the dairies it is impossible to replace, and it is evident that the farmers have to be taught that to emerge from their difficulties they must henceforth look to other sources of income besides cheese-making. The system of farming must be modified, and Cheshire become a cattle and sheep-grazing county as well as a cheese-producing one. With regard to treatment, it is not a little remarkable that the plan which received most favour at the hands of the public was one that emanated from a gentleman who had no medical knowledge. "Drowning men," it is said, "catch at straws;" and this adage was well illustrated by the readiness with which men adopted the treatment advised by Mr. Worms. This consisted chiefly of the exhibition of a mixture compounded of onions, garlic, and assafœtida. Little was to be expected from this odoriferous compound, except perhaps that which really did take place—namely, a rise of £1 per ton in the price of onions, and a scarcity of assafœtida in the drug market. A more modern remedy is chloroform, which, like every other, has found favour with some persons. Our experience of it is anything but favourable; nor can we see how such an agent could act beneficially in the destruction of the cattle-plague poison. If any agents were likely to prove of use in such a way, it was to be expected that the sulphites might; but these, like everything else, failed completely when used on a large scale. Neither time nor the occasion will, however, allow of my dwelling on the treatment of cattle plague, and I might at once dismiss the subject altogether; but it appears to me that reference should be made to one system at least which was adopted as a preventive—I allude to vaccination. The system had its origin in the belief that cattle plague was not only an exanthematous affection, but closely allied, if not identical with, variola. This view having had its origin with some distinguished members of the medical profession, soon found favour with the public, and vaccination was at once seized upon with an avidity that would have done honour to a better cause. The great demand for vaccine lymph led pretty soon to the manufacture of a spurious fluid by a class of persons ever ready to trade on public credulity. Points charged with a compound of collodion and croton oil, or some similar irritant, were sold by the gross, and more than one person in London is said to have profited largely by the transaction. The Northwich hundred of Cheshire was made the site of the nefarous practice of two persons, who travelled throughout it, carrying an irritating mixture in quart bottles, with which to "vaccinate" cattle. It is said that they operated upon a thousand animals at least, making large incisions on the lower parts of the neck or shoulder, and wetting the wound with the fluid. In many cases the plague showed itself in about eight days afterwards, and its outbreak was believed to depend on these persons visiting diseased and healthy stock indiscriminately. The charge made by them was two shillings and sixpence per head, so that the sum netted was very considerable. No doubt, however, that a very large number of cattle were properly vaccinated; and as so many applications for lymph were made that it was found absolutely necessary for the national vaccine establishments to refuse all comers. Five shillings for a well-charged point was given in many instances, and as much as a guinea a head is said to have been paid for legitimate vaccination. The vaccination mania, no doubt, largely contributed to the spread of the plague. Three causes for this were especially brought into operation: 1st, A fancied security in the mind of the cattle owner; 2ndly, The totally unprotected state of even properly vaccinated cattle; and 3rdly, The positive inoculation of animals with cattle-plague virus, persons acting under the belief that this was vaccinating them. Strange as it may appear, some country surgeons, among others, were found to speak of the artificial introduction of the virus of cattle-plague as vaccination. Coming from a cow, they seemed to think that it must necessarily have some of the properties of vaccine lymph, and as the use of this in the human subject was a security against smallpox, so the cattle-plague virus would give equal immunity to cattle without in any way endangering their lives. Without commenting on ignorance of this kind, I may observe that it was hoped that the important question of the susceptibility of cattle to the action of humanized vaccine lymph would have been solved by the experiments. For this purpose, and for other allied matters connected with vaccination, a circular was prepared by the Cattle Plague Department, and forwarded to each inspector who was a member of the profession. The questions asked were: 1st. The number of animals vaccinated. 2ndly. The number successfully vaccinated. 3rdly. The source whence the lymph was obtained. 4thly. The number *re*-vaccinated; and, 5thly. The number in which vaccination failed altogether. A very large number of returns were received, and an attempt was made to classify the answers, so as to take those of value. This, however, may be said to have failed to rightly determine the matter; but, taking the cases most to be depended upon, it appears that out of 7,692 animals 4,188 were successfully vaccinated, and 1,775 resisted the influence of the vaccine lymph entirely. The figures here given leave unaccounted for 1,729 animals. The return from Cheshire, like most other things connected with the cattle-plague, was unique of its kind: it stated that 28,113 animals had been vaccinated; 22,564 before the appearance of cattle-plague, and 5,649 after a declaration of the symptoms. These figures are sufficient to show the extent of the delusion which possessed the minds of the farmers in that ill-fated county, apart from anything else which has been advanced in this address. It will be seen that no correct deductions can be made from the inquiry, and that the questions of susceptibility, the advantages or otherwise of retro-vaccination, remain very much in the same state in which they were prior to the cattle-vaccination mania. I come now to a matter of considerable importance, both in itself and as affecting the continuance of the cattle-plague—namely, the liability of other animals to this disease. That the poison is inert when introduced into the system of man and many of the domesticated animals we have abundant proof, but that goats and sheep are highly susceptible to its influence has been established beyond all doubt. Only a few weeks after the importation of cattle-plague, five goats, belonging to a dairyman in Islington, died under circumstances which rendered it very probable that they had contracted the disease from plague-stricken cattle. These cases were quickly followed by others, and goat after goat came into the College suffering from the malady. Towards the end of September, 1865, intelligence reached us that some sheep in Norfolk were dying from a disease, the symptoms of which were strongly allied to cattle plague. The case was investigated, and left no doubt whatever as to the nature of the disease. Case followed upon case, until the question assumed a national importance. Such has been the progress of the disease among sheep, that the officially reported cases now amount to 6,721. This number, however, falls very far short of the real one; and I have no hesitation in saying that many hundreds would have been added to it if the matter had from the beginning been properly considered. By way of illustrating the mischief done by sheep, I select the following from many similar instances: Some sheep which had contracted cattle-plague were unwittingly sold by a farmer in Norfolk. They were sent from his place to Bury St. Edmunds, and were here divided into two lots. One lot went into Suffolk, and carrying the disease with them, destroyed a large number of valuable sheep belonging to a large farmer, and two other small lots belonging to two different persons. A lamb also, belonging to one of the ewes of the original lot, caused the destruction of fourteen cows and heifers, from being taken into premises at a distance at the time it was suffering from the plague. The other division of the sheep came into Essex, and led to no less than four distinct outbursts of plague—three among sheep and one in cattle. One of these outbreaks took place in Essex, two in Kent, and one in Middlesex. Facts like these are unanswerable by those who deny the liability of sheep to cattle-plague, and they would alone justify the course adopted by the Government in closing the fairs and markets, and restricting the movements of sheep in ten counties of England. As I have elsewhere said, we could afford to smile at the pretended knowledge of farmers which has given origin to the statements that sheep are unsusceptible of plague, were it not for the mischief it has produced. A grave responsibility rests with these men; and should cattle-plague again increase, not a few of the cases will be found to depend on the malady being contracted from diseased sheep. It is incumbent on the veterinary profession to show to farmers that, however perfect their education as tillers of the soil may be, however great their knowledge of the various breeds of cattle, sheep, and pigs, for feeding or stock purposes, they are nevertheless totally incompetent to give correct opinions of the nature or treatment of diesase. The art of breeding, rearing, and feeding animals has not necessarily any more relation to the science of pathology than the art of cultivating the soil has with the knowledge of its geological epoch. It is said that farmers should be chemists, mineralogists, geologists, zoologists, naturalists, botanists, veterinary pathologists, and mechanical engineers; but let us remember that, however desirable such a state of things may be, they are, as a class, none of these at present, but simply farmers—producers of food for the people. We have heard also a good deal from some of these persons respecting the practical knowledge of shepherds. Men, they say, who have been among sheep during their whole lives must know all about their diseases. This is a fatal mistake; for if there can be found one class more ignorant or prejudiced than another, it is that of shepherds. We say this advisedly, having now had many years' experience of them. In truth, it is their want of knowledge which greatly augments the farmers' loss of sheep from common causes. In matters of disease affecting sheep, shepherds should be taught that their duty to their masters consists in receiving, not in objecting to, the veterinary surgeon's opinion. The remark of a certain noble Scotch lady to her English shepherd—"You are a man among sheep, but a sheep among men"—applies with equal truth to the whole class. Besides the dangers to which I have alluded for keeping up the disease, there is the further one of its reintroduction from the Continent. Holland, as has been shown, is at this moment a great pest-house; and although our ports are closed against Dutch cattle and sheep, there is, nevertheless, such an organized system existing in the cattle trade that a risk is continually being run of animals from Holland finding their way to the metropolitan and other markets. Nor is it improbable that the disease may reach us from other sources, as it would appear that one of the results of the late war has been to introduce the plague into some parts of Germany. When we look at the net-work of railways which now exist on the Continent, and the facilities for bringing animals from such distant places as Hungary, Austria, and even Russia herself, we may well tremble for the safety of our English cattle and sheep. The great demand for animal food in this country, and the high price at which it is sold, will always stimulate commercial enterprise to push its ramifications to the greatest extent. Indeed, it would appear in our day that commerce knows no limits. Certain precautions, however, may be adopted by which the supply of foreign stock may be preserved, and a fair amount of security afforded against the introduction of contagious disease. One thing above all others is to exclude store stock, or, in other words, to make it imperative that every animal imported shall be killed for the meat market. Individually, I am strongly opposed to the establishment of a quarantine for store cattle and sheep. Practically, it cannot be carried out with the large numbers we are accustomed to import. Besides which, these quarantine stations would become pest-houses, centres from which infection would spread far and wide. The right way would be to establish a live market at each place of importation, that a fair competition might take place between buyers, and the sender thus obtain the full value of his animals. After the sale, however, none should be allowed to leave the place alive; and to meet this requirement slaughter-houses should be attached to every such market. The slaughter of every animal should also be enforced within a limited time of its arrival at the place of importation. Very much more might be added on so important a subject as this, as the introduction of contagious diseases from the Continent has now assumed such a proportion as to call for an entire revision of the importation law. Time, however, will not permit of any additional observations, and therefore I pass to the more immediate object I have in view. Another contagious disease, however, demands a passing remark, in consequence of the frequency of its recent outbreaks. I allude to the small-pox of sheep. It is a circumstance of no small significance, as showing the increased danger to our flocks as well as our herds from imported contagious diseases, that this malady has been ascertained to have broken out no less than eleven times during the present year. The first of the cases occurred in Northamptonshire; and although the flock with which the foreign sheep came in contact was not large, still the whole of it was sacrificed, the unattacked as well as the attacked animals being killed. The second, third, and fourth outbreaks were in Essex, and confined nearly to foreign sheep, very few of the English sheep exposed to the infection contracting the malady. The fifth likewise took place in Essex among foreign sheep. Besides these, during the last fortnight I have learned, from personal inspection, that the malady has been introduced into no less than six places in Cheshire, thus bringing another serious evil upon that ill-fated county. It is much to be feared that the extent of the disaster has not yet been fully ascertained, as it is well known that many thousands of foreign sheep have been sent there for feeding on the pastures which had been emptied by the cattle-plague. Numerous as the cases of outbreak from foreign sheep have been, there cannot be a doubt but they would have been greatly added to had it not been for the vigilance displayed on a recent occasion by the inspector at the port of Harwich. Only a fortnight since, a vessel—the Zealous—came into Harwich from Antwerp, having on board 1,369 sheep consigned to different importers. On examining the animals, by turning up each sheep, Mr. Taylor, the inspector, found that no less than 87 of them were affected with variola. The whole cargo was detained, and two days afterwards seven more cases were detected. On the third day Professor Brown went to Harwich, and on re-examining the sheep he found nine others in the first stage of the malady, and five which presented pits. This brought the total number of cases to 108. It is worthy of remark that these sheep were all consigned to one person, and were part of a lot of 300. All the diseased animals were killed and buried, and the rest of the cargo was slaughtered for the meat-market, the skins being detained and disinfected. Since this, two other cargoes have been detained at the same port, that their true condition may be ascertained.

HER MAJESTY'S PRIZE FOR PLOUGHING.—This prize was competed for near Windsor, under the auspices of the Royal Bucks Association. After a sharp contest, it was won by Lieutenant-Colonel Vyse, whose ploughman, with one of Howard's Bedford ploughs, performed some remarkable workmanship, the furrows being laid with almost mathematical precision. A challenge cup was also offered for competition at the same match by the three adjoining counties, and was won by Mr. Agar's ploughman, with a Bedford plough.

THE RINDERPEST AND ITS CONTRADICTIONS.

Sir **Brydges P. Henniker** has given the following amusing account of the progress and treatment of the disease: Without entering at all into those exciting subjects which produced such exciting debates and divisions in the House of Commons—subjects about which there might be a difference of opinion there, where political matters were very properly banished from their meetings—apart from all these, and wholly apart from all political feeling, there were many matters which forced themselves on the notice of the House, matters of deep importance to them all, and quite sufficient to tax to the utmost the energies of our members. When Parliament first met we had been labouring for some months under a severe scourge. For months the cattle plague had been among us, and in that neighbourhood at least they had done what little they could to help themselves, and then could only wait for the governing powers to do what they could to get rid of the calamity, or at any rate to try to check its progress. How the matter was discussed and re-discussed those who read the daily papers knew well, and very weary, dreary reading it was. He, in common with many others, studied the papers every day in hopes of seeing some remedy that would be efficacious—not that there was not some infallible remedy given every day, but unfortunately next day it was contradicted as utterly useless. He did not know if many of them studied the papers at the time, but the diversity of opinion was, to say the least, slightly curious. He took the trouble to extract from the *Times* for some months the remedies given, and to put them together to show how they contrasted with each other, and he should like very much to read one or two of them now. In the first place he found that every sound animal ought to be destroyed within ten miles of where there had been a diseased one, and directly afterwards he found that no animal whatever ought to be destroyed. Then it was stated there was no cure at all for the disease, and immediately afterwards that the only cure was homœopathy. Next he saw the disease was caused by a fly, and the proper thing was to put up mosquito curtains in their cowsheds; and this was followed up by the statement that it was the easiest thing in the world, for they had only to wash their faces and wipe their eyes, and it was also recommended that a pound or two of tar should be put on their noses: while the next thing recommended was port wine and whisky administered by the gallon; but unfortunately this was followed by the fact, that it had been tried on Miss Burdett Coutts' cows, and they had all afterwards died from what was called "excitement," but which he (Sir Brydges) should call drunkenness. Well, the next thing was beef tea every half-hour, and this was followed by the real, true, and only remedy—inoculation in the tail. It might probably have occurred that the tails would have dropped off, and it suggested itself to him afterwards that the name should be changed from the rinderpest to the hinderpest. He would only trouble them with one other remedy, which no doubt would prove a very useful one to them, though he confessed it was not so to himself, for he could not understand it. He took the trouble of copying it out, and thought the first time he met his friends, the farmers of the neighbourhood, he should like to read it to them:

"That the therapeutic inferences drawn from the state of the peritoneum, the capillary engorgement of the omnasum and the hyperdermic condition of the tissues point to the organic hyposulphites and salacine with hypodermic and subcutaneous injection of morphia and ferruginous preparations as the best remedy" (roars of laughter).

Now he hoped they would bear that in mind, and that it would prove useful to them. He had heard of one more remedy, which he would repeat to them. One day when he was out hunting, he met a friend of his who lived, as their friends the newspaper reporters would say, not a hundred miles from Great Easton. They entered into conversation about the cattle-plague, and his friend said: "Well, Sir Brydges, I saw a real, good remedy in the papers the other morning." He replied: "I don't believe in remedies; I have read them till I am tired of them, and I don't believe in them." "Well," his friend said, "I believe this is a real, good one." Of course he was very anxious to hear it, and there was something in the explanation that he thought everybody would like. He said: "I read in the papers the other day that Mr. Tollemache called together all his tenants who had suffered from the cattle-plague and returned half their rents, and *that is the only really good remedy I know of yet;*" and he added—and he (Sir Brydges) was not responsible for the observation—"That is what I call a Christian: that man is of a very different kidney from Mr. Gladstone." Well, he had got somewhat away from his toast; but, as he said before, at the beginning of the session they were naturally in a great state of uncertainty and doubt, and he did not regret having called attention to the subject of the cattle-plague to-night, for he was afraid there was rather too strong an impression abroad that no more care need be taken. Now, it was a curious fact that although it was certainly diminishing, yet it had broken out lately in places that had been free from it before, and they ought to bear in mind that the cattle-plague was not over. Well, as he was about to say just now, amid all this doubt and uncertainty, they naturally turned to their members of Parliament, who were not slow to respond to their appeal. Directly they met, the subject was carefully gone into, and whether or not it led to a good deal of useless discussion, and one or two useless clauses, he was not prepared to say, but he must say that their county members, and, indeed, their members generally, showed a desire to do their whole duty in the matter, and to give all their time, ability, energy, and consideration to the subject, not caring how long their sittings were prolonged so long as they did their duty by those who sent them to Parliament to watch their interests.

EFFECTS OF GOOD FEED ON MILCH COWS.—Our cows give fully one-third more butter this year than last, due solely to good feeding and warm quarters in the winter. They were cows I bought with the farm. They looked well, but proved to be poor milkers. They had been suffered to go dry about the 1st of November, under the impression that milking them in the winter would seriously injure them the coming summer. And I have no doubt that there is considerable truth in this idea, provided the cows in the winter have nothing but corn stalks and straw, and are not stabled. But if they are fed liberally, they may be milked, not only without injury, but with positive advantage. It favours the habit of secreting milk. Till within six weeks or two months of calving, a good cow, with plenty of rich food, can give four or five quarts of milk per day, and will still be able to secure milk enough for the calf: she will eat and assimilate more food, and will get the habit of secreting more milk. I believe there is no better way of restoring the milking qualities of cows that have degenerated from poor management. I gave my cows three quarts each of cornmeal a day, and an abundant supply of corn stalks and straw. Instead of letting them go dry in November, I kept them stabled in cold weather, and they gave more milk, or rather they made more butter, after we commenced to feed grain in November and December, than they did in August and September. I milked some of them till within six weeks of calving. This is perhaps too much—ten weeks would be better. The cows, after we stopped milking, fleshed up rapidly, and many were the predictions that the corn meal would spoil them for milk. But it did not. They give more milk than ever before, and it is certainly very much richer. The prospects now are, that for the year commencing the 1st of last November till the 1st of next November, they will give as *much again* butter as they ever gave in a year before. So much for good feeding in winter. I weigh every pound of butter made, and feel confident that this opinion will prove correct. I have not yet fed meal this summer, but shall do so the moment there is any indications of a falling off in butter. In fact, I should feed meal now if I had my buildings conveniently arranged for the purpose. I have not the slightest doubt that it would pay to give each cow two quarts of corn and pea-meal a day. If twenty bushels of corn a-year will *double*, or even add one-third to, the amount of butter and cheese made by a cow, it is easy to figure whether it is profitable or not. I do not say they will not eat as much grass and fodder as if they were not fed with meal. The more food they will eat the better, provided it is turned into butter and cheese.—*Harris's "Walks and Talks."*

MILLS AND MILLING.

"THE RUNNER"—FORM; FUNCTION; POSITION; BALANCING, AND DRIVING.

The above is the second head of our subject, as formerly proposed, which we now proceed to consider. In form, the runner presents a corresponding diversity to that of the bed-stone; it has always done so from the earliest records of history giving any account of mills. Amongst the Hebrews it is represented as being of the same diameter as the bed-stone, but thinner in the middle or at the eye, which is easily accounted for by its concavity, the bed-stone being convex. According to the drawings in "Calmet's Fragments," by Taylor, the cup or hopper is of stone, forming part of the mill-stone, the whole being represented as hewn out of a solid block of stone. In the times of David and Solomon, the ancient Tyrians excelled in the art of stone-cutting, and, doubtless, it was from them and the Egyptians that the Hebrews learned, and also afterwards excelled, in this same art. It is, therefore, but reasonable to suppose that a highly-industrious nation, as the Israelites at that time were, would many of them expend no small amount of ornamental art upon the family mill, considering that it was a domestic machine of so much importance, and held so sacred that it could not be pledged or removed from its place in the milling department. The same argument applies to the hand-mills of private families amongst the ancient Greeks and Romans, as amongst the Hebrews. The mill-stones of the common people would be plain as to outward appearance; but those of many of the higher classes would involve more expense in the manufacture. The old British quern was also a plain homely affair, very few of them having a hopper or cup hewn out of the stone, the eye of the runner being a large rude round hole, greatly larger than the pivot upon which the runner turned, and in at which hole the damsel at the mill shed the grain as fast as required. The pivot of Calmet's mill is represented as being also hewn out of the block, thus forming part of the nether mill-stone, and although we aver that this was the exception to the common rule, the pivot for the most part being either wood, iron, or brass, yet it was doubtless the peculiar construction in not a few cases. The pivot of the querns, which have come under our own personal observation, was either iron or wood, and not above one-third to one-half of the diameter of the eye of the runner.

We draw special attention to the form and dimensions of the eye of the runner, and the pivot upon which it works, or rotates as a fulcrum, as they involve some important principles of mechanism, several times patented as modern discoveries, as will subsequently be shown: we allude to the eccentric motion of the runner and the peculiar grinding action which it involves.

In the early cattle mills, in which the draught-bar was fixed to the runner, the latter turning upon a pivot fixed in the bed-stone, the motion of the former (the runner) was also eccentric as in the hand-mills and quern. In practice, however, there was a great objection to a heavy runner thus rotating upon a fixed pivot, as there was nothing to keep the grinding surfaces asunder but the grain and flour between them. To obviate this objection, the runner was fixed upon an axis, or a spindle as it is generally technically termed, when the rotation of the runner became concentric with the bed-stone, and not eccentric. In the former case, the form of the eye of the runner had to be of greater diameter than that of the axis or spindle, in order to allow the grain to pass down to the grinding surfaces, just as the eye of the old hand-mills had to be larger than the pivot rigidly fixed in the bedstone.

When water-power was applied by the ancient Romans, Greeks, &c., the runner also turned with the spindle; but its position was sometimes changed from the horizontal to the vertical, as will subsequently be shown, and, in this latter case, the eye of the runner was closed, and the grain most probably fed in at or near the centre of the bed-stone, as in Rustall's hand-mill, for which the Society of Arts awarded a prize of forty guineas in 1800.

Mr. T. Rustall's hand-mill, just referred to, includes several peculiarities of mechanism that demand special attention. It is a vertical grinding mill, like the French military mills, and the spindle passes through the eyes of both stones. The runner is fixed upon the spindle, the eye being thereby closed. The lower part of the bed-stone rests upon a bolster, and it is brought nearer to and further from the runner by means of screws. The grain is fed in at the eye of the bed-stone, and this eye is closed according to the specification of several patents subsequently granted. And, lastly, the stones are surrounded with a cloth hood, by means of a broad wooden hoop, to prevent the finer particles of flour or the "stive" from escaping. This machine was not patented.

In 1814 the Society of Arts gave to a Mr. C. Williams a premium for a vertical grinding mill; but in this case the grinding surface was the periphery of the runner, and the bed-stone a corresponding concave segment of about the quadrant of the circle, forming the breast, the principle of construction being similar to that suggested by Mortimer about a century prior, whose description we quote in a subsequent paragraph.

Many writers on this subject take the pestle as the origin of the runner—the steps of progress being something as follows: *First*, a draught-bar was fixed to the handle of a large pestle, and turned round by an ass or ox; *second*, the pestle assumed a conical form, as is now used in grinding colours; *third*, it took the form of an edge-runner, as used in crushing apples, or as mortar mills worked by cattle (in principle therefore it resembled the spindle or rolling-pin, used and preferred by the Arabs to this day for grinding grain and coffee, according to the testimony of Niebuhr); *fourth*, cylindrical-edge grinding stones, as in Williams' mill, and as proposed by Mortimer subsequently quoted; *fifth*, vertical stones on the principle of Rustall's; and, *sixth*, horizontal stones worked by water wheels, as described by Vitruvius. But the writers thus referred to fall into many erroneous conclusions evidently, from an imperfect knowledge of practice, and the somewhat ambiguous account of mills and milling given by Pliny and the old authors. We shall first quote Pliny, Vitruvins, and the other authorities referred to, and then endeavour to reconcile their statements with the demands of practice.

Pliny, in giving an account of the mode of grinding corn, says (quoting Bohn's Library): "All the grains are not easily broken. In Etruria they parch the spelt in the ear, and then pound it with a pestle shod with iron at the end. In this instrument the iron is notched at the bottom, sharp ridges running out like the edge of a knife, and concentrating in the form of a star; so that, if care is not taken to hold the pestle perpendicularly while pounding, the grains will only be splintered and the iron teeth broken. Throughout the greater part of Italy, however, they employ a pestle that is only rough at the end and wheels turned by water, by means of which the corn is gradually ground."—(Book xviii., chap. 23.)

Vitruvius, after describing water-wheels for raising water, such wheels having paddles fixed round their circumference, says: "Water-mills are turned on the same principle, and are in all respects similar, except that at one end of the axis they are provided with a drum-wheel toothed and framed fast to the said axis; this, being placed vertically on the edge, turns round with the wheel. Corresponding with the drum-wheel a large horizontal-toothed wheel is placed working on an axis, whose upper head is in the form of a dovetail, and is inserted in the millstone. Thus, the teeth of the drum wheel, which is made fast to the axis, acting on the teeth of the horizontal wheel produce the revolution of the millstones; and in the engine a suspended hopper supplying them with grain, in the same revolution the flour is produced."—(Gwilt's "Vitruvius": Chap. X., p. 244.)

From Johnston's translation of Beckman's "History of Inventions" we quote the following relative to water mills in

Palestine and Italy: "The Arabs have no windmills—these are used in the East only, in places where no streams are to be found, and in most parts the people make use of hand-mills. Those (watermills) on Mount Lebanon and Mount Carmel have a great resemblance to those which I found in many parts of Italy. They are exceedingly simple, and cost very little. The millstones and the wheel are fastened to the same axis. The wheel, if it can be so called, consists of eight hollow boads, shaped like a shovel, placed across the axis. When the water falls with violence upon these boards, it turns them round, and puts in motion the millstones over which the corn is poured."—(Darvieux, Reisen, Part III.)

Mortimer (vol. ii., p. 382, fifth edition, 1721) says, "A mill may probably be so contrived that the grinding-stone or runner may be vertical, and of but a small circumference; the flat and square edge whereof may be fitted into another fixed stone, cut hollow, about half or a third-part of a circle, which runner by its first motion may despatch as much corn in the same time as a larger one the other way. Several also of these vertical stones may be placed on the same axis, and may be used in all sorts of mills."

In the first of these extracts, Pliny is evidently giving a description of two different processes in the art of milling with a pestle. The first shelling or decorticating, as in the manufacture of groats and pearl barley, and the other pounding into meal, the pestle in both cases being actuated by a wheel, most probably of the simpler construction, as seen by the above traveller in Lebanon and Carmel. But be this latter as it may, the former is proved by the practice having come down to the present day. Thus, in China they hull rice by a pestle in a mortar, the former being actuated by the feet upon a plank, or lever, working over a fulcrum. The head of the pestle is fixed to the underside of the plank at one end, and at the opposite end the foot of the operator is applied, who grasps a cross rail in his hands, the better to steady himself when at work. In "sheeling," or decorticating, the mortar is nearly filled, and the pestle is not allowed to touch the bottom, but by a gentle vertical stroke plunged down through the grain as near to the bottom as not to bruise the wetted barley, or splinter the parched oat or spelt; but in making meal or flour with a pestle, the bottom of the mortar is only thinly covered, against which the grain is ground by the pounding action of the pestle, a small quantity only being thus ground at a time, which when sufficiently fine has to be removed before any more fresh grain is thrown in and pounded. In the example which the writer saw in Inverness-shire, the pestle had a handle like a mallet, but inserted near its head, so that it hung vertically in the hand, ready for work; and in working it, the measure of the stroke so as not to bruise the wetted barley in the bottom, was acquired by the experience of the operator; but when worked by the foot, as in the Chinese example, or by cams or teeth upon the axle of a water-wheel like a forge-hammer, as in the examples of Pliny, the pestle would be prevented from touching the bottom by mechanical means. But further into minute details we need not go, the above being sufficient to indicate the principle of construction and of working. At every stroke of the pestle, when actuated by water, the person attending to the mortar in grinding would have either to throw in fresh grain, or put the bruised mass in the mortar in a proper position to receive the next stroke of the pestle.

However, that the ingenuity of the Romans, in Pliny's time, soon got a-head of the pestle and mortar, from the description by Vitruvius of canal mills in working horizontal stones, is manifest. Mill-wheels were generally driven by water in canals; and the drawings of Vitruvius' canal mill published at Leipsic in 1720, a copy of which is filed in the British Museum, correspond with the above description, only in the drawing the millstones actuated by two water-wheels are most probably situated below the level of the axes of the latter, whereas in the above description they appear above them. The probability is, that in practice Vitruvian mills were constructed on both plans, that represented by the above extract being the more common.

It is not so easy to reconcile the description of the simple water-mills of Lebanon, Carmel, and Italy to any definite working plan, the pouring of the corn over the millstone in feeding being the more difficult part of the description to unravel, as it admits of several different interpretations. Thus it may have been on the plan of Mortimer's and Williams's cylinders, as in constructed on this plan the corn falls upon the grinding surface of the runner. It corresponds in principle to the rolling pin or spindle-stone grinding against a concave surface, as seen by Niebuhr, and said by him to be preferred by the Arabs, both for grinding flour and coffee, only the rotary motion in the former case is continuous in one direction, whereas the Arabian spindle-stones alternately rotate backwards and forwards. Rustall's crank and stones are upon the same axle; but the corn is fed in at the eye of the bed-stone. In the case of the French military mill and other examples of a modern date, the grain, however, is fed in at the top of a vertical runner, which would answer the Palestine problem of feeding. Of these two plans the former corresponds more closely with the literal interpretation of the quotation, but probably both plans were reduced to practice.

Of Mortimer's plan nothing more requires to be said, unless we add that it has been some half-a-dozen times described and patented since the publication of his work in 1721 (?)

Of the diversified form of grinding-surfaces, both of the bed-stone and runner, an extended notice has been given in No. II.; and the same may be said of the position of the runner, when coupled with the preceding observations in this paper.

In two respects the function of the runner differs from that of the bed-stone—viz., its fanning and centrifugal action; and both these will be more advantageously considered under the head of aërating stones, &c. The remainder of our remarks in this paper will, therefore, be confined to the balancing and driving of the runner.

The vertical balancing and working a pestle in a mortar, alike in grinding as in decorticating, is a very nice piece of art, as already stated, and requires no little experience to gain its mastery. It is reported that the first pearl-barley mills were introduced from Holland into Scotland in 1710, by Mr. Meikle; so that prior to that date the whole of the barley thus used was decorticated in mortars. And the new method of making pot-barley thus introduced was between two horizontal stones, set sufficiently far asunder not to grind. In this case the barley-dust, &c., was sometimes pressed through a perforated casing that surrounded the two horizontal stones; but the principle of mechanism was different from the perforated casing of the single vertical pot-barley cylinder now commonly in use, for the latter acts both as a grinding surface and a filtrating medium. In other cases the two pot-barley stones were surrounded by a close case, or hoop. Moreover, in the first plan, when the dust was forced or filtered through the perforated hoop, it fell either into a dust or stive-room, or was surrounded by a hood or cloth, to keep it together and prevent waste, as in Rustall's hand-mill; and the same principle of economy is observed in the more modern mills for making pot-barley.

In the Hebrew hand-mill and old British quern the runner was balanced by the grain being ground under it: hence the nice manipulation of feeding these mills so as to make good work; and to some extent this is also true in feeding water and other power mills, the runner being always less or more supported by the grain being ground under it, when rotating over the bed-stone.

In the Vitruvian mill, which is doubtless that which was introduced into Britain by the Romans, the "dovetail" on the spindle obviously corresponds with the more modern "iron cross" or "rynd," for supporting and turning round the runner, just as the "drum-wheel" and crown-wheel, or "horizontal wheel," upon the spindle, correspond to the old cog-wheel and trundle. In both cases there is, no doubt, a slight difference of mechanism between the two plans; but in principle they may be said to be identically the same. At first the Roman hopper, suspended over the eye of the runner, required a damsel to attend it, in order to regulate the feed; but here manual labour has been supplanted by special mechanism upon the spindle, to which the significant name of "damsel" has been retained. The "cup" of the old hand-mill runner, already noticed, has also been retained both in principle of mechanism and name.

In the Roman examples of the Vitruvian mill, constructed as represented by the Leipsic drawings, with the millstones below the crown-wheel on the spindle, the bottom of the spindle would most likely turn in a socket or upon a pivot fixed in the centre of the bed-stone, as in the hand-mills. There are many reasons for believing that both these plans were in use at the period in question. In the British Museum Egyptian Gallery there is a large monumental slab, presented by Lord Spencer, that had been used, on some military or like occasion, as a nether millstone, on the above plan of a socket in the centre for the spindle of the runner to work in. Wards, or channels, radiate from the centre in the usual way, roughly made by the rude hand of some military miller; and the runner was most probably driven by an ass or ox, like the Arab mills, in Egypt, or those found in the ruins of Pompeii, subsequently noticed.

The Romans had also floating mills. These carried paddle-wheels, so that, when moored in the rapids of rivers, or at bridges, the wheels were forced round by the current, and the millstones driven in the ordinary way, as in canal mills. In examples of this kind the millstones were most probably below the axles of the water-wheels, the bottom of the barges serving for the floor of the mills. A number of these barges, or floating mills, moored across a river, would make a rapid anywhere, by damming back the water, so that the head-current would stand lighter than the tail-water, just as we see at bridges and the like.

The old tide-mills of this country were, doubtless, copies of the floating mills of the ancient Romans, at least in principle, if not in the details of much special mechanism.

WHEAT—ITS CULTURE IN AMERICA.

Wheat is the most prominent cereal which we find spoken of in ancient record. The Prophet Ezekiel mentions it as being traded in, in the land of Judah and Israel. We also find it spoken of in the days of Joseph in Egypt, etc. It has been cultivated from those days to the present by many nations of the globe. There are limits beyond which it may not be cultivated, as with all other cereals. What those limits are, we are not fully prepared to say, and as they have no immediate influence upon our present discussion, will be passed. The question will rather be upon its production in the wheat-growing section of the United States.

From the census statistics of 1860 we learn that it is grown in thirty-four States, seven Territories and districts; in other words, every inhabited State and Territory of our Union produced a greater or less quantity of this first of all the bread crops. The aggregate number of bushels in 1860 was 173,104,924. Illinois produced the greatest number of bushels of any of the States, and Rhode Island the least. The production, in proportion to inhabitants, was greater in the Western States than in any other section; also, the increased proportion since the census of 1850 was greater, some of the other sections actually falling off, or producing less to each inhabitant than heretofore.

We now come to the question, why this falling off, especially in New England and the Middle States? There are many causes, more or less remote, affecting this result. One principal cause is the immense surplus, more cheaply produced in the West, finding its way to better markets; these sections finding that other crops, etc., could be produced at a greater profit, and with less risk and care, turned from the culture of a crop which was gradually lessening in profit. Other causes, as disease, insects, diminished production, from the partial exhaustion of the soil, etc., had their influence on this result. That our lands are as capable of being made to produce as good, if not better, crops than ever heretofore, admits not of a shadow of doubt in the mind of the writer; the requisite necessary is proper culture. As good wheat can be grown in Connecticut as in any of the Middle or Western States—wheat that will yield as many bushels to the acre, and make as nice flour, as that from any other section. I have raised wheat in Connecticut that for quality had no superior that I have been able to find, yielding twenty-five to thirty bushels per acre, and that upon land not highly prepared for more than an ordinary crop. Others have done the same or better. With a proper rotation and culture, the same good results may be attained by a good proportion of the farmers of the Eastern or Middle States.

In newly-settled countries, the soil being virgin, contains a large amount of accumulated organic matter, derived from natural sources. This furnished pabulum for growing crops for many years. The cultivator, not feeling the necessity of fertilizing his soil—as when one piece failed to give full crops, all he had to do was to adopt another—he thus acquired a habit which succeeding generations were slow to deviate from; consequently the partial exhaustion of the soil, causing the failure in many instances to produce paying crops. Such culture brought its natural reward—disease, winter-killing, insect destruction, etc. Now, to bring our land into the proper condition to give us good crops of wheat, we must adopt a better system of culture. Our land must be worked to a greater depth, be more thoroughly pulverized, have suitable fertilizing material liberally applied: where necessary be underdrained, to the better warming, draining, and aërification of the soil. When we accomplish this, we shall find that as good crops will be realised as in former days; and those destructive insect enemies, which are the dread of all wheat growers, will be defeated, especially where we adopt a system of rotation, raising crops for feeding stock, and manuring with especial reference to this crop, and growing from a less area a greater amount of grain or other crops. We must adopt an alternation of growing the cereals with the leguminous and root crops, and feed them out, applying the manure made therefrom to the soil. Such crops should be raised for feeding as will furnish the elements for the richest manure, such manures being found the most economical for application to the soil. It will scarcely be necessary to say that wheat may be grown on a variety of soils, as there exists a great diversity over the region in which it is a leading crop; that should be selected which is a little rolling, well drained, naturally or artificially.

SELECTION OF SEED.—Varieties are numerous of winter and spring. Winter wheat being the most valuable, and most generally raised, will be the kind here discussed. These varieties are, to a greater or less extent, dependent for their good qualities upon the soil, climate, and cultivation which they receive. A variety should be selected by comparison which yields well, is hardy, commands a good market, and makes a good article of flour. When such is found, secure it even at a liberal outlay of money. Having once obtained it endeavour to improve upon it by selection and cultivation. Select the earliest and longest heads from the field, or that part of the field containing them, and let it get fully ripe; keep it separate from the general crop, thresh it with the flail, clean it; then, with a sieve which will pass all the small shrunken grains, separate it. A further improvement is by throwing it across a long floor, rejecting all that falls short as light, and retaining for seed the heaviest and best, which goes beyond. This process will effectually clear the grain of cheat and other foul seed.

PREPARATION OF SEED FOR SOWING.—Having cleaned your seed as above, prepare a pickle of salt dissolved in water sufficiently strong to bear up a potato, and for half a barrel of such pickle add half a pound of blue vitriol. When all is dissolved, put in the seed, stir it well, and skim off all that rises to the surface; throw the remainder into a basket to drain; let this be done ten or twelve hours previous to sowing. Just before sowing, spread it on a tight floor, and roll it in slaked lime, to a powder, stirring it well with rakes. It is now ready to deposit in the soil. The first of September is as late as the seed ought to be sown, and in no case ought it to be delayed later than the 10th of the month.

QUANTITY OF SEED TO THE ACRE.—As the seed of different varieties varies in size, some will require a larger quantity than others; so also, if sown broadcast by hand or drilled by machine, the former requiring more seed than the latter. From five pecks to two bushels, and, in some instances, more is used, varying with the mode of sowing and with different cultivators. The grain drill, properly adjusted, deposits the seed more uniformly, covers it at an even depth, requires less seed, and usually gives greater crops than when sown by hand; also, the work is done quicker, the seed comes up more uniformly, and is better prepared to resist any counteracting influences. Where seed is sown by hand it should be evenly distributed, and the harrowing should be both length and crossways the field, to cover the seed as uniformly as possible, and fine the soil. Having in previous communications expressed my views how good ploughing should be done, I only add here, that the soil is brought into a much better condition for wheat if ploughed twice or more. I now pass to the

HARVESTING.—The proper time for cutting wheat or rye, to be made into flour, is before it comes to full maturity, as in the latter case it yields a less and poorer quality of flour than when cut in a more mature state. Experience teaches that the greatest quantity and best quality of flour is made from grain cut in the dough state—that is, when the grain is yet soft, yielding no milk when crushed between the nails of the thumbs. The perfection of machinery for cutting grain has to a great measure done away with the sickle and grain cradle, thus abolishing a very laborious part of harvesting. The machine, with the self-raker, now makes quick work of cutting down a field of grain, so that more of it can be cut in just the right time.

BINDING, SHOCKING, ETC.—We are liable, while harvesting, to have heavy showers of rain; it therefore becomes us to perform those operations well. In binding, the bands should be drawn tight, or in curing the bundles shrink, loosening the bands so that in hauling, etc., many become loose, causing delay to re-bind, etc. Ten or twelve are sufficient for a single shock; they should be set in two rows, the butts firmly implanted in the stubble, a little open, the tops leaning together and well pressed; take two sheaves and part the tops and place them astride the shock, spreading so as to cover the tops well; bind them together by twisting the straw from one cap sheaf to the other, and, if properly done, they will stand any ordinary amount of wind and rain. Here it may remain till sufficiently cured for the mow or stack. Every one who raises grain ought to have sufficient barn room to store his grain in, so that it may be secure in any weather, and that he may take advantage of circumstances in threshing and preparing it for market; but comparatively few large growers are thus provided, consequently the grain is stacked out. In stacking out, preparation should be made by laying a suitable foundation to raise the bottom at least a foot from the ground, to keep it dry and give ventilation, with a suitable stack pole in the centre. The centre of the stack should be kept well rounded, firmly built, and the outer sheaves have the buts well forced into those on which they lie and be inclined to shed rain, etc. The topping should be carefully done, closing every place so that no rain may penetrate, and fastening the top sheaves so that they will in no case blow or slip off, and finishing with a thatch well bound and secured.

THRESHING AND CLEANING.—These operations are now performed almost exclusively by horse or steam power; the best way, or mode of doing, needs no elucidation; but that the cleaning part is very imperfectly performed is too evident from the amount of foreign matter contained in the grain sent to market. Much pains should be taken in cleaning, to get it as clean as possible of cockle, cheat, etc., as a good clean article of grain will sell enough more readily, and for a greater price, to pay the extra expense of the little extra trouble. The better the straw is preserved after threshing the greater its value for feeding or other purposes. WM. H. WHITE.

—*The American Country Gentleman.*

THE HUNTINGDONSHIRE AGRICULTURAL SOCIETY.

MEETING AT ST. NEOTS.

The annual show and dinner of this society was held at St. Neot's on Wednesday, Sept. 26, and there was a very good show considering the absence of cattle. The horses were good, both as regards numbers and quality. There were some excellent roots, and the poultry was well represented. There was also some capital ploughing, the weather and land considered.

The judges of stallions were Messrs. Cranfield, Buckden; Edwards, Buckworth; and Prior, Leighton;—of other horses, Mr. F. Rooper, Abbotts Ripton; Mr. C. Barnett, Stratton Park; and Mr. Thomas, Bletsoe;—of sheep, swine, and roots, Messrs. Plowright, Manea; Craig, Fotheringhay; and Searson, Deeping St. James.

The following are the awards of prizes:—

STOCK.

Open to all England. To the exhibitor of the best stallion for agricultural purposes, the property of or hired by the exhibitor.—First prize, £15, Mr. John Manning, Orlingbury; second, £7, Mr. William Walker, Colne.

To the owner of the best cart mare and foal, first premium, £5, by the society, and a cup of the value of £5 by the inhabitants of St. Neot's.—First prize, Mr. R. H. Ekins, Wenington; second, £2, Mr. Looker, Wyton.

To the owner of the best two-year-old cart gelding.—First prize, £4, Messrs. T. and S. Fyson, Warboys; second, £2, Mr. R. H. Ekins, Wenington.

To the owner of the best two-year-old cart filly.—First prize, £4, Mr. Rowland Wood, Clapton; second, £2, Mr. E. Faux, Yaxley.

To the owner of the best two cart horses.—Mr. J. O. Daintree, Lolworth, £4.

To the owner of the best yearling cart colt or filly.—First prize, £3, Mrs. Orbell, Abbott's Ripton; second, £2, Messrs. Fyson, Warboys.

To the owner of the best mare or gelding above four and under five years old, adapted for hunting purposes, the property of the exhibitor six months previous to the show. A cup of the value of £25, by Mr. James Marshall.—Mr. Sisman, Buckworth.

To the owner of the best mare or gelding, five years old and upwards, adapted for hunting purposes, the property of the exhibitor six months previous to the show.—Mr. Samuel Earl, Morborne, £10. A protest against payment of this premium entered.

To the owner of the best mare or gelding above four and under five years old, not exceeding fifteen hands, adapted as a roadster, the property of the exhibitor six months previous to the show.—A premium of £5, Mr. F. Reynolds, Chatteris.

To the owner of the best mare or gelding, above five years old, not exceeding fifteen hands, adapted as a roadster, the property of the exhibitor six months previous to the show. A cup of the value of £5, by the inhabitants of St. Neots.—Mr. S. Day, St. Neots.

To the owner of the best pony, not exceeding 13½ hands high. A cup of the value of £5, by the inhabitants of St. Neots.—Mr. L. Carpenter, St. Neots.

SHEEP.

To the owner of the best pen of three wethers, under two years old.—First prize, £6, Mr. Edwards, Buckworth; second, £3, Mr. Edwards.

To the owner of the best pen of ten theaves, under two years old, and to be kept for breeding purposes.—£5, Mr. Edwards, Buckworth.

To the owner of the best pen of ten ewes, that have suckled lambs to the 1st of June last, and to be kept for breeding purposes.—First prize, £5, Mr. J. O. Daintree, Lolworth; second, £2 10s., Mr. J. Goodliffe, Connington.

To the owner of the best pen of ten wether lambs.—First prize, £4, Mr. Edwards, Buckworth; second, £2, Mr. Edwards.

OF THE SHORT WOOL OR MIXED BREED.

To the owner of the best pen of three wethers under two years old.—First prize, £6, Mr. Wilkinson, Godmanchester.

To the owner of the best pen of ten ewes, that have suckled lambs to the 1st of June last, and to be kept for breeding purposes.—First prize, £5, the Earl of Sandwich; second, £2 10s., the Duke of Manchester.

To the owner of the best pen of ten wether lambs.—First prize, £4, Mr. Wilkinson, Godmanchester.

To the owner of the best pen of ten ewe lambs.—First prize, £4, Mr. Wilkinson, Godmanchester.

EXTRA PRIZE.

A cup of the value of twenty guineas, by Messrs. Browns and Goodman, to the breeder of the best sheep exhibited in the yard, either by itself or in any one of the preceding classes, such breeder being a member of the society.—Mr. Cranfield, Buckden, for a long-wool shearling ram.

SWINE.

To the owner of the best boar of the large breed.—First prize, £3, Mr. G. E. Daintree, Fenton; second, 30s., Mr. J. O. Daintree, Lolworth.

To the owner of the best breeding or suckling sow of the large breed.—First prize, £3, Mr. C. Lewin, Brington; second, 30s., Mr. J. O. Daintree, Lolworth.

To the owner of the best breeding or suckling sow of the small breed.—First prize, £3, Mr. Sisman, Buckworth; second, 30s., Mr. Edwards, Buckworth.

To the owner of the best pen of three yelts, over six and under twelve months old.—Prize, £3, Mr. J. O. Daintree, Lolworth.

About one hundred of the members of the society sat down to dinner at the Corn Exchange, under the presidency of the Hon. Colonel Duncombe.

Mr. **Attenborough**, of Sawtry, proposed "The Members for the County," hoping they would soon "pull off the malt-tax."

Mr. **Fellowes**, M.P., who was received with loud cheers, said: I think I may congratulate my agricultural friends on their prospects, compared with what they were last year. We have had a very good show in the yard—we have had a very good meeting at our festive board. I think I may also congratulate you on the harvest that is just now terminating. Although we have had a considerable quantity of rain, and a long harvest, I hope it will prove to be above the average, and that no considerable amount of damage has arisen from the rain that has fallen. If some mischief has been done, I think we may congratulate ourselves on the fact that the prices of corn have a little risen; and, so far as we can judge, there is every appearance of the rise continuing. But there is another matter upon which we may congratulate ourselves, and that is the gradual decrease of the cattle-plague throughout the country. When we met last year it was at an unfortunate time, when the cattle-plague was spreading its ravages week by week. During the last few months we have seen a considerable decrease, and the number is now reduced to about fifty-one. We may venture to hope that, under the advice of her Majesty's Privy Council, the cattle-plague will, in the course of a few weeks, altogether cease to exist. But we must pay regard to the orders issued by the local authorities, founded as they are on the orders of the Privy Council. I have been told that there is little of the cattle-plague in the country now, and that many of the occupiers of land think that these orders may be dispensed with. I hold an opinion entirely different. I think the only way of preventing the cattle-plague from spreading during the winter months is by strictly attending to the orders which have been issued. What we have to guard against most particularly is, when we are buying stock, to ascertain where that stock comes from, so far as we are able to do so. We must adopt the system which has been mainly instrumental in getting rid of the cattle-plague, and that is, the system of stamping out. When that system was first begun, many of our farmers were opposed to it; but I believe the opinions of many of these gentlemen have changed, and that they have come to the conclusion prevailing in many parts of this country, and also in Scotland, that the only way of getting rid of the cattle-plague is to stamp it out wherever it makes its appearance. During the last few weeks we have had the misfortune of hearing of two or three instances of the cattle-plague in this county. Fortunately for us, in many of the herds in which it broke out, no second case has occurred. Of course we must pay great deference to the opinions of those who declare it to have been the cattle-plague; but it is a most fortunate thing, if it was the cattle-plague, that no other cases have occurred. If the system of stamping out is carried on, I think we may live in hopes of getting rid of the cattle-plague altogether within the next few weeks; but, as I said before, I believe the greatest care will be required to prevent its spreading during the winter months.

Lord R. **Montagu** said: Gentlemen, agriculture is the only trade which is fashionable. As soon as a merchant becomes rich—as soon as he attains a position in society—he must needs become a farmer. No one thinks of being a tanner or a tallow-chandler for his amusement. But every man tries to get a farm, and then swears that he loves the smell of a dung-heap more than the scent of his wife's flowers. Perhaps he obtains three or four farms, and throws them into one. This naturally increases the competition for farms, and raises their price. But the price of your produce is not proportionately raised. It is true that the wages of artisans are much increased, and that many of them eat beef twice a-day, which they did not do before. This, however, does not enhance the farmer's prices so much as it draws imports from abroad. Then, again, you are subject to losses by weather. If it be dry, alas for your turnips! If it be wet, your corn is damaged. There are also losses of cattle by disease. Besides, sheep and oxen cannot be laid by until there is a demand for them in the market. An ox soon eats up his price without adding to his value. He must therefore be at once forced upon the market. These are all great drawbacks. What, then, is to be done? That which the manufacturer has to do in his race with other manufacturers—lose no chance of improving production by new machinery, and increasing the fertility of your land by new manures. With regard to the losses of cattle, I may be pardoned for reminding you that I foretold you more than a year ago what would happen, and sketched out a course which I recommended you to pursue. The main points were to slaughter the diseased animals, and to isolate the places of infection. Since that time the Royal Commission has abundantly proved that the great lines of traffic are the lines of the disease. Since that time the Act has carried out what I then advised. Soon after the Act came into operation the disease decreased, and where the Act was not carried out the disease reappeared. When it invaded Ireland the same course was adopted, and that country has been freed from the curse. If that course had at once been carried out here—if the Government had not been behindhand, a quarter of a million of cattle might have been saved. The Cattle Plague Bill contained a clause indemnifying the Privy Council for ordering the slaughter of cattle. I resisted that clause until Mr. Gladstone promised to grant a compensation for the cattle thus slaughtered. Mr. Walpole and Mr. Henley assisted me in extracting that promise. But things changed, and it was put out of the power of Mr. Gladstone to fulfil his promise. But an act was passed late in the session which has not a retrospective compensation. But Jove looks with indulgence on the broken vows of lovers, for they are ever fragile. There is another subject which I hope the Government will not lose sight of—I mean the pollution of rivers. It is now generally known that the cholera is spread by means of impure water. I am sorry that my Bill of 1864 was not accepted by the House. The commission which was then appointed has, however, reported strongly in favour of the water-shed boards, which I at that time recommended. I trust that the present Government will act, and will not leave us a prey to the cholera, as the late Government sacrificed your oxen to the cattle plague.

THE MANURE PIT.—The Agricultural Editor of the *New-York Times* gives a description of a barn recently erected by Dr. Hexamer in Westchester county. In alluding to the stables, he says: The floors of the stables are watertight, and the surface descends a trifle, so that all the liquid flows in gutters into the manure pit directly in the rear of the stalls. Small flap doors are prepared close to the floor, which provides a convenient opening for throwing out all the solid litter into the manure pit, which is about 100 feet long, 6 feet wide, and 4 feet deep, substantially cemented on the inside and bottom, so that no surplus water can enter or escape. At one end of the pit stands the privy, which furnishes much excellent fertilizing material. The manure is spread around evenly and covered with muck, or rich mellow soil. The pit will contain about 100 loads; and on that small farm it is filled and emptied three or four times annually with the choicest compost. With such a pit no manure is wasted. As the liquid from the stables is not always sufficient to keep the manure, containing a large proportion of nitrogenous matter, from becoming "fire-fanged," the leader from the eave-troughs is so arranged that any desirable amount of water can be turned into the manure pit during the fall of rain. The pit is so arranged that a cart or waggon may be driven along close by its side, from end to end, thus facilitating the great labour of forking and shovelling the compost. The arrangements for making barn-yard compost, on which farmers must rely chiefly for material to maintain the fertility of their grounds, are most complete, convenient, and economical. Those farmers who waste half of their barn-yard manure should learn by these suggestions to save all their manure, and thus raise bountiful crops of grain, roots, fruit, or grass.

THE RECENT RAM SALES.

BY A PRACTICAL FARMER.

Far be it from me to say a word in detraction of the merits of that useful and almost innumerable body, ram-breeders, very many of whom are deserving of our highest eulogiums, and nearly all are worthy of great commendation. But there is a limit to all things, and in some respects ram-breeding is beyond that limit. As the season for sale and letting is now nearly over, I may be permitted, without prejudice, to say a few words upon the subject.

I would premise that my object in writing as a "practical farmer" is to benefit, if I might so say, the practical farmers of the kingdom. Now it is my impression that the great body of practical farmers are paying too much for their rams. It is quite a different thing for a ram-breeder to give an extravagant price for a particular ram suited to his purpose; but of late every ordinary sheep-breeder has been necessitated to give a price beyond what I think the circumstances of the case absolutely require. Good flocks of rams may be bred, and leave a fair and reasonable profit when disposed of at an average of from £5 to £8 each. But in these times farmers are so abounding in spirit or so "full of money," that such prices are looked upon as denoting an inferior breed, and in consequence such flocks are neglected. The general class of farmers muster at the large gatherings, and become the buyers or hirers of sheep at almost fabulous prices.

Now let us look at the thing practically. An ordinary breeder will give from £15 to £25 for the hire of a sheep, or he may purchase one at the same rate. The difference is by no means so beneficial as many suppose. Overfed animals seldom do much good service amongst the ewe-flock at first, and often fail altogether. If the sheep is a purchased animal, the risk is on the purchaser; if a hired sheep, the risk is on the owner or vendor, who will have to supply a substitute when required. Take a sheep at £25. If well attended to by the shepherd, he may serve from eighty to one hundred ewes, and possibly become the sire of one hundred and fifty lambs, which is a very liberal estimate. These lambs, as they fall, will be at a cost of some 3s. 4d. each; but generally a ram should not be put to more than from sixty-five to seventy ewes. A liberal fall of lambs may in such cases be fairly anticipated; but, taking the average of *breeds*, they will not much exceed one-half pairs, particularly if guile ones are included in the estimate; so that the seventy ewes might drop one hundred and five lambs, which, from a £25 sheep, would average about 4s. 6d. each lamb, or, from a £15 sheep, would cost near 3s. each. As to the number of lambs coming to maturity, that is in a great measure a question of management and "luck;" but all requires consideration, when hiring or purchasing a ram.

If we take the like view of putting the male to the female as we do in other cases, the result would come out worse still—say the horse to the mare, bull to the cow, boar to the sow, ram to the ewe. A £25 sheep to a hundred ewes would be at the rate of 5s. each; a £15 sheep to seventy ewes would be about 4s. 4d. each. This is undoubtedly a high figure to expend for a whole flock, and worthy of grave consideration on the part of every sheep-breeder.

There cannot be a question relative to the desirability of breeding from the best flocks, either directly or indirectly. My own practice has chiefly been to use sheep got by the most popular ram of the time, but indirectly, through the purchaser or hirer. One of my best rams now in use is from a sire which brought to his breeder the good round sum of £250, in four different hirings; but I obtained his services for a very moderate sum, and his stock come up admirably.

I want "the common breeder" to keep a good look-out as to what destination certain first-class sheep are forwarded, and in due time to follow and obtain some of their produce. Let the breeders of rams expend their money lavishly if they please; it may answer their purpose, but it can never pay the common breeder to do it, except for a special purpose. It has unquestionably been a lucrative season for our more popular ram-breeders. The average of many sales and lettings have been unusually high. The *Mark Lane Express* of the past three weeks gives many averages of the various breeds of sheep. Take the Lincoln long-wools. Mr. Thos. Kirkham, Biscathorpe, *let* 150 rams to average £17 9s. 4d. each; Mr. Chaplin, Tathwell, *sold* forty—average, £15 16s. each; Mr. R. C. Howard, Temple Bruer, averaged about 10 guineas; Mr. Clarke, of Ashby, one hundred shearlings, about £13 each; Mr. Joseph Kirkham (Carrington Flock), about 14 guineas each; do. (Audleby Sale), £16 8s. each; Mr. T. Castle's, Pointon, averaged £16 6s. 6d.; Mr. Davy, Owersby, £12 8s.; Messrs. Dudding, Panton, about £11; Mr. J. H. Caswell, about 13 guineas; and many others at similar averages. The Shropshires also average high figures—Mr. Baker, Grendon, £11 2s.; Mr. Masfen, £14 11s. 8d.; Messrs. Cranes, 16 guineas; Mr. H. Smith, £10 16s.; and Messrs. Lane, Garne, and the Cotswold breeders at still higher averages. The Leicester flocks have not attained such high averages, nor are the Southdowns this year in the ascendant; yet still the averages are higher than is compatible with the profitable conduct of general business. The flock of ewes should not average more than two shillings per head for the rams' service. This may be a very unpalatable doctrine to preach to ram-breeders; but, nevertheless, it is amply sufficient for the tupping of each ewe, taking the average of flocks in the kingdom. I believe the business of breeding rams for letting or sale has seen its best days. The markets are fast becoming over-stocked. The agricultural papers are full of advertisements of ram sales; and, moreover, common breeders are wisely saving a few lambs from their best ewes for future service. These all tend to lower its position, and only the most popular flocks will ultimately be able to maintain their standing. Most of the ram sales or lettings are now conducted by public auction. The flockmasters or breeders like this; and, where ten breeders will attend a private sale or letting, from thirty to forty will attend an auction as a rule, There they bid against each other with readiness and spirit, because each man knows he may have the sheep of his choice if he so pleases—he has only to be the last bidder. In this way many fabulous prices are realized, and much higher averages are attained. The business of a second-rate ram-breeder is by no means an enviable one. He has many anxieties. His rams take the best of his keeping; his averages are low; common breeding and grazing, with wool and mutton at present prices, will pay better. It should suffice that a comparatively few of our best and true flocks should be kept up efficiently, with the view of providing sires from which ordinary stock rams might be saved to be used, instead of annually expending a large sum. Of course a change of blood might as readily be obtained through one sheep as from several, by judicious selection of the ram and care in marking the ewes. All these minor matters are too much neglected, and, consequently, breeders have to pay for it, in having to procure three or four sheep where one might have done. It would be folly in the extreme to disparage the laudable efforts of our ram-breeders—that is not my desire, but to suggest to our common breeders how to make better use of the expensive rams they may buy or hire of them, without injury to their own flocks.

THE IRISH LAND-TENURE QUESTION.

Upon this subject Lord Oranmore and Browne has sent the following letter to the *Times*:—

SIR,—As Irish representatives cannot, without considerable rashness, speak plainly on a subject so undoubtedly popular as Fixity of Tenure, perhaps you will afford space for a few remarks to one who, from having managed his own property for eleven years, can speak with practical experience. Mr. Mill, while he philosophised on natural rights, declined entering on the consideration of the real matter before the House, viz.:—Is it desirable, either for the good of the community, or for the wellbeing of the people themselves, that fixity of tenure should be given to the peasant farmer of Ireland?

I am sorry to say there are still in Ireland 445,231 tenants whose holdings only average 12 acres of land. The large majority of these small holdings originated by subdivisions, which were made when the land was held under leases, which, losing their value in the Famine, were ejected or surrendered. This unwholesome state of things having resulted from long leases, I think it is not unreasonable to assume that they have been tried and found wanting; but it may be said, they know better now, they see the evil of subdivision; or, subdivision can be prevented by the conditions of the lease. I can at once reply to the first suggestion by stating, of my own knowledge, that when, not closely watched, they will, and still subdivide the holdings; and as to conditions, the expense of enforcing them would be so great, where there are so many tenants to deal with, that no one wishing for any income from his estate would attempt it. For example—I know one estate with an income of above £22,000 a-year, paid by upwards of 5000 tenants. It does seem strange that it should be necessary to discuss the advisability of encouraging and confirming such a state of things! Again, I can state without fear of contradiction, that in the West of Ireland I have never seen a single holding, of the class I refer to, well drained, fenced, and cultivated; and for this I in no wise blame the tenant, for any one acquainted with draining knows that to do it effectually requires great care, skill, and capital, and that no return for the latter can be expected for at least a couple of years. How can a poor man wait for this? I could give instances without number to show how many are the difficulties attending any attempt to improve where holdings are so small, and where there are so many rights and interests to deal with; for instance, there are say some twenty tenants living on each side of a small stream: this cannot be deepened without the consent of all, and, independently of the difficulty of obtaining this consent, few are willing to work for their neighbours. I know two instances in which at considerable expense the landlords deepened such a stream, charging the tenants nothing. In neither case could they be got to keep the drain cleared, and in one instance a tenant, having a lease, brought an action against the landlord for intruding on his land. But why don't landlords build decent cottages and small barns? A slated cottage and suitable offices for 12 acres of land would not be built under £200, a sum equal, in many cases, to the fee-simple of the holding; and if the holding were enlarged the building would become an encumbrance. Supposing, under the proposed law, the tenant was to lay out £60 (£5 an acre) on building: would this be a beneficial improvement to be repaid by the landlord?

Again, the wetness of the climate very generally narrows both the times of sowing and reaping; therefore to get the crop into the ground early, or to gather it in a good state, requires the command of every facility in the shape of horses, machinery, &c. The small tenant has none of these, and his crop suffers accordingly. Let us now look to the social habits attending this system. Young people marry almost as soon as they arrive at man's estate, and so are immediately burdened with the support of a young family for whom there is no employment. Then, as soon as daughters grow up it is the invariable habit to give them fortunes on their getting married; so, if by middle life a small tenant has saved a little money, it is thus disposed of, and he has only to look to the land to recompense him. Then, if there be a pig, calf, cow, oats, &c., to buy or sell (independent of the fair or market being the place of recreation) he occupies as much or more time in disposing of them than it would take to dispose of twenty head of cattle or a large quantity of grain.

I think I have thus shown that the size of small holdings is alone a sufficient reason for the landlord not building or making improvements on them, and the experience of a century supports my view that, from the habits, circumstances, want of necessary skill and capital, small tenants are unable so to cultivate the land as to get from it a fair return. It appears to me that the only other important question that arises is this—though the community suffer from loss of produce, and the landlord from necessarily lower rents, is the tenant so prosperous, that what is lost on the one hand is more than gained on the other, by the comfort and contentment which result to him from this system? Would it were so, and then assuredly I for one should be too glad to see it confirmed and encouraged. But instead of this, the Irish peasant is the worst fed, worst clothed, worst housed human being in Europe, living in a hut which commonly is shared by his pig, fowls, and cattle; in Ireland a mere slave of priest or landlord; in England a hewer of wood and drawer of water; and consequently he is now, and under this system must continue, a discontented, dissatisfied member of society. I cannot see that it requires any deep philosophy or any great knowledge of political economy to arrive at the conclusion that exceptional legislation is no wise justifiable for the purpose of supporting a system which has resulted so disastrously. The failure of the potatoes in 1846 and the following years showed the extreme misery that may result from it; almost simultaneously emigration, the natural remedy for the evil, was much facilitated, and now the people go willingly to a country where they rejoin those of their friends and family who have gone before, and where, not only is plenty to be had for the earning, but, with reasonable prudence in youth, independence, such as they never could obtain in Ireland, is theirs by middle age. Surely if the Government truly desires the wellbeing of the Irish people they will facilitate the natural egress from an over-populated country, rather than for party ends confiscate the landed property of Ireland solely to increase and perpetuate one of the principal and natural causes of Irish poverty and discontent.

WOODS AND FORESTS.

There was a time when England was a country of forests. When, like America and Continental Europe of the present day, the old woods occupied large tracts in every part, as the domiciles of wolves, wild boars, and other beasts of prey, which roamed the gloomy solitudes, occasionally emerging to the open glades to pick up a juvenile cottager, and carry him off to feed its young cubs. These forests were the parents of marshes and bogs, which constituted the never-failing feeders of the numerous rivers and streams that intersected the land in every direction. In those early times, the alternating seasons were more marked and regular than since cultivation has covered the land with its vegetable productions. The summers were more intensely hot; the winters more piercingly cold; the spring more regular in its appearance, and more to be depended upon for its genial and renovating influence; and the autumn more settled in its weather, for the work of gathering-in the fruits of the fields. Such is the account given by chroniclers; and we will at once give them credit for correctness and veracity, though perhaps not to the full extent of their representations. Certain it is, that the clearance of the forests, and the consequent drying up or draining of the marshes and bogs, have caused a material alteration not only in the entire face of the country, but in the supply of water the rivers formerly derived from those reservoirs, and also in the periodical amount of rainfall and the regularity of its distribution. Many streams throughout the country, which formerly supplied large mills with unfailing water-power, except in the very driest of seasons, are now, with vastly-improved machinery, requiring less power, frequently unable to work; and almost all are compelled to be supplemented by steam-power to make good the deficiency in the rainfall. In addition to this cause of the declining water-power of the country, we may instance also the rapidity with which the water that falls is hurried to the ocean—by the system of drainage throughout the country, by which the land is cleared of rain almost as soon as it falls, having now none of the ancient reservoirs, in the shape of bogs and marshes, to receive and retain it for future use. All the old water-millers complain that the rainfall, however heavy, does them no permanent good. It just occasions a momentary "flush," which is rather injurious than otherwise, being in excess of the requisite power, instead of being held in reserve by the marshes, and, above all, by the *subsoil* of the adjacent lands. This was formerly, in the undrained state of the country, perhaps the largest source of supply, because it extended over the whole area, and yielded its reserve deliberately and in driblets; whereas now, the shower, as soon as it falls, finds its way into the drains, and from thence to the river, in a few hours; causing, as we have stated, a temporary flush of water, but of no permanent benefit to the miller, who, in fact, is compelled to stop his mill for the time, and let the precious fluid run past by the back-water course.

With the millers, however, we have at present nothing further to do; and we have only brought them into our argument by way of illustrating the effect of the two systems now being pursued in this country, namely, cutting down and clearing the forests and woodland, and the draining of the land generally. The latter is an operation indispensable to good husbandry, and we can only wish that there was a General Drainage Act passed, compelling every landowner to drain his property, in order to render it as productive as possible. The clearance of woods and forests is another affair; and it is a question whether it would not be a large benefit to the agriculture of the country if a greater portion of the poor land were planted, instead of denuding it of the woods that at present exist; and to replace those which have been cut down by fresh plantations. This has been found absolutely necessary in France, where the effects of clearing the forests in certain parts of the country have been so injurious, by preventing the rainfall, and thus occasioning severe droughts, that the Government has itself undertaken to plant fresh extensive tracts, the beneficial effects of which are already felt. The clearance of the forests, in fact, had gone on in that country to an alarming extent; and in the single department of Ariège, it is said to have gone on at the rate of 3,000 acres a-year for the last century; and that in the whole Empire, which formerly contained forty-two million acres of forest a century ago, upwards of twenty-two million have been cleared.

The proportion of forest or woodland required for an agricultural country, in order to ensure it a regular and sufficient rainfall without violent storms, is estimated by Rentzsch at 23 per cent. for the interior and 20 per cent. near the coast. This estimate related to Germany; but in England, the proportion, according to the same authority, is only 5 per cent., and even this is reduced by Sir Henry James, the head of the Ordnance Survey Department, and who ought to know, to 2.5 per cent. This is certainly a very small proportion, and below that of every other country, the next lowest being Portugal, which has very little woodland. For fuel, England at present requires no wood, whatever she may do a hundred or a thousand years hence; but for the purpose of ensuring a regular supply of rainfall and reducing the force and number of violent storms, the planting of the waste and poor lands would undoubtedly be beneficial, although from the large proportion of sea coast a less extent of forest is required than on the continent. An increase of the area, however, would obviate the objection—if there is any validity in it, which we very much doubt—urged against draining, that it has already been carried too far, having subjected the land to drought in a much greater degree. We say we doubt this: rather, we have no doubt about it; for during the severe drought of 1865 those lands which were the best drained sustained vegetation the best. An instance from Boussingault is quoted by Professor Murray: "The Wolf-spring in the Commune of Soubey furnishes a remarkable instance of the influence of woods upon fountains. A few years ago this spring did not exist. At the place where it now rises, a small thread of water was observed, after very long rains, but the stream disappeared with the rain. The spot is in the middle of a very steep pasture, inclining to the south. Eighty years ago the owner of the land perceiving that some firs were shooting up in the upper part of it, determined to let them grow, and they soon formed a flourishing grove. As soon as they were well grown, a fine spring appeared in place of the occasional rill, and furnished abundant water in the longest drought. For forty or fifty years this spring was considered the best in Clos-du-Doubs. A few years since, the grove was filled, and the ground turned again to a pasture. The spring disappeared with the wood, and is now as dry as it was ninety years ago."

FARMYARD POULTRY: PROFITS AND MANAGEMENT.

BY JOHN ALGERNON CLARKE.

"Birds of the courtyard," as the French call them, have acquired an important status since the days of our old agricultural authors. Thus Richard Parkinson, in "The Experienced Farmer" (1798), says, "At the time I profess giving directions for the management of poultry, I cannot avoid hinting to the farmer that he must not rely upon the profits arising from breeding and rearing poultry for the payment of any part of his rent. I do not mean to discourage what I am fond of eating; but I should not prove myself the friend of the farmer if I did not show both sides of the question, and tell him it is possible to lose by management in this article, and scarce probable to gain, unless he selects a particular species or sort." Turkeys he condemns, as "those voracious animals, which will devour as much as any quadruped on the farm, not excepting the hogs, which can be raised at less expense. Calculate, if you can, what a turkey will cost by the time he is fit for the spit……Few turkeys are fit for the kitchen but what cost the farmer from 20s. to 30s., although he sells them at market for 4s. 6d. to 5s. I would advise the farmer to leave the breeding of turkeys to gentlemen of fortune. Chickens, though by many degrees not so bad as turkeys, will not pay for breeding." Geese he admits to be profitable, and adds that "ducks may be estimated on the same footing *(? web)* as geese."

In his "Treatise on Livestock" (1810) he adheres to this unlucky view of the poor birds, saying, "Poultry will not pay (generally speaking) for what they consume, though they are convenient and pleasant, and a certain proportion ought to be raised."

Richard Kirwan, in his "New Farmers' Calendar" (1801), says: "Poultry is an article of luxury, for which the little farmer never obtains an adequate price. He had better allow his wife a certain annual sum for pin-money than suffer her to keep these devourers. An exception must be made in favour of geese, which will graze to advantage, and make much good manure. They are, besides, useful in a farmyard for giving alarm by night" (!)

George Culley, im his work "On Live-stock" (1807), gives just one half-page "Of the Feathered Tribe."

Arthur Young, in his "Farmers' Calendar" (1809), owns that in some situations fowls may pay well for good food and close attention. He instances "the most successful case he ever met with"—a lady in Kent netted £20 a year by fowls, turkeys, geese, and ducks, after the family was well supplied with table-birds and eggs. Her system was to let labourers on the farm raise all, at a fixed price for each grown-up bird.

Loudon (1835) thus sums up all the information he could collect on the desirability of keeping poultry: "Though poultry form a very insignificant part of the live-stock of a farm, yet they ought not to be altogether despised. In the largest farm a few domestic fowls might pick up what might escape the pigs and be lost; and on small farms, and in many cottages, the breeding and raising of early chickens and ducks, and in some situations the rearing of turkeys and geese, are found profitable."

This is not very encouraging. But the Useful Knowledge Society's "British Husbandry" (1835) is a little more hopeful, devoting, however, only one page and a quarter in the two volumes to remarks on the subject. Every country housewife, the author says, knows so well how to manage, that particulars are unnecessary; and as for a history, etc., of the breeds, they doubt if the said wives would read it. They observe that the breeding of poultry could, with a little more attention, be carried to a far greater extent than at present; and they adduce the case of a Berkshire labourer, with only one room to live in, who sent up to London as many as four hundred ducklings in a year, sold, at six weeks old, for 12s. per couple.

Statistics of cost and profit in poultry-keeping are certainly rather scanty. As to the production of eggs, we have an experiment, given by Parkinson, of six game-hens for one year, the hens being prevented from sitting. The number varied from seven to thirty-one per week, though some were laid in every month, the total being 764, or about 127 eggs for each hen. We may reckon the proceeds at 8s. to 10s. per hen. The birds were kept close in a London yard, and fed upon whole barley, of which they ate half-a-peck per week among the six. If the grain were worth 10d. per peck, the expense would be about 3s. 8d. per hen per annum, leaving a yearly profit of 6s. 4d. per hen, without allowing anything for housing or attendance.

Mr. Punchard, of Haverhill, a most successful Cochin-breeder, had thirty-five Cochin hens, which laid in one year 5,445 eggs—an average of 155 eggs each. There were most in January, and fewest in April, the sort being especially valuable as winter layers.

Some few years ago Mr. Mouatt, of Stoke, near Guildford, had three Polish pullets, which, beginning to lay at six months old, laid in twelve months 524 eggs, or 174 each. At 9d. a dozen, this would be about 10s. 6d. per bird. During the year each consumed 5s. 4½d. worth of barley, peas, rice, and meal, leaving a profit of 5s. 1½d. per bird, without reckoning anything for housing and trouble. Here we have about thirty-one eggs for each 1s. expended; and if each egg weighed one-and-a-quarter ounces, there was produced 41lb. of the most nutritious food that can possibly be procured, at the low cost of 4¾d. per lb.

There have been also a few published debtor-and-creditor accounts, where table-fowls as well as eggs have been sold. Mr. Richard Pigott, of Stokesferry, gave, in the *Agricultural Gazette*, his actual expenses and receipts with ten hens and a cock in 1846, and twelve hens and a cock in 1847. All the food was bought, and the produce sold, in the village—eggs at 8d. to 9d. per dozen, chickens at 3s. to 3s. 4d. per couple. The cost of groats, oats, barley-meal, tail-wheat, eggs for sitting, and the collection of eggs was, for the first year, 8s. 9d. per bird; for the second year, 5s. 3d. per bird. The net profit the first year was 7s. per bird; the second year, 8s. per bird.

Mr. England, in a Highland Society's "prize essay," gave a statement of cost and produce of a poultry establishment of 100 hens. A year's expenses for food (all purchased), for house-rent, henwife, repairs, interest on building capital, etc., averaged 10s. 6d. per bird. The returns averaged 51s. 6d. per bird, leaving a balance of profit of 41s. per bird. This is very handsome on 100 hens; but as only 30s. are set down for the henwife, the necessary labour added would very much reduce the figure.

Mrs. Ferguson Blair, who has raised 1,000 chickens a year in the Carse of Gowrie, prints in "The Henwife" her balance-sheet for 1860. Her expenses amounted to £311 2s. 9d., and she netted only £26 17s., a very pitiful result for so large an outlay. The item for labour is very high—"wages, £80." The food was all purchased, and very costly; and the household consumption amounted to £45 9s. Mrs. Blair avers that she could have shown a better "credit side" if she had "gone in" for profit, and not put prohibitory prices upon her show pens of poultry. Judging by the prices I have to pay great prize-winning breeders for tolerably good birds, I have no doubt that they realize a good deal of money; and, in all probability, it is the Scottish henwife's management or commercial ability that cuts so poor a figure in her balance-sheet.

There are certain great establishments in this kingdom and on the Continent, where vast numbers of hens are kept for egg-laying, being fed upon purchased horse-beef; and, undoubtedly, considerable profit is made.

But what we require are *bonâ fide* farmyard cases; and these are not forthcoming in connexion with a well-kept cash-book and ledger. In fact, however, we may just take the various foregoing profits, with considerable additions, as representing what is due from well-managed poultry on a farm. Mrs. Blair says, "A farmyard is the paradise of poultry, and nowhere can they live in greater comfort and plenty. Fowls ought to pay the farmer if anybody; they have the advantage of the gleanings of the stackyard, and at times are almost independent of any extra feeding." The truth is, that only a trifling portion of what poultry eat at a farm homestead involves any outlay, the birds picking up off the ground and redeeming from waste probably one-half of their living; while the greatest proportion of the other half consists of the tail and refuse corn, which is of only nominal value. I am speaking of course of ordinary cases, where fattening heavy and early birds is not made a regular business, to which other departments of farm management have to give place. I know, for instance, of a yard where the mistress sells over £20 worth of eggs, beside furnishing a plentiful house consumption, raising pullets for keeping up her stock of 100 hens, and feeding a few birds for her own table. The purchased food costs but a few shillings per year, the collection of eggs being the chief expense. I could name another yard where, for years, the proceeds from a brood stock of sixteen cross-bred hens with two cocks, and six ordinary brown ducks with one drake, have been over £25 per annum, in addition to the household supply of birds and eggs; no food bought excepting a few pounds' weight of chicken-rice, only a few eggs sold, and the birds disposed of at the country market-price of 2s. 6d. to 3s. 6d., and occasionally 4s. 6d. per couple. The henwife has been paid one-third of the gross receipts; but if the farmer's wife herself attended to the fowls, of course this deduction would all be saved.

Occasionally one meets with more exact details. In 1848 appeared the following statement from a farmer's wife in the north of England: "On our farm the poultry consist of sixty hens, principally of the Dorking breed, six ducks, and seventy to eighty geese, purchased in the autumn. A year's cost of barley, milk, meal, and corn, woman's wages, and market charges, and the geese bought in, amounted to £19 11s. 8d. The produce—in eggs sold at 5s. 6d. per 100, and chickens at 3s. 6d. per couple, ducks at 2s. 6d. each, and geese at 5s. 6d. each—realized £54, leaving a profit of £34 8s. 10d.

I have heard (on good authority) of a Sussex farmer who annually sends to London 100 turkeys, for which he receives £250, or 50s. per bird! Cramming birds for the London market may be considered a business by itself. Breeding show-birds for prizes is also another occupation that only fanciers of such things will engage in. But if you "go in" for high-priced pedigree stock, and manage as you should do, you will find handsome returns far beyond those for common farmyard fowls. All that I insist upon now is, that a good profit may be made by the farmer's wife when selling eggs and birds at common market prices; and though the total income from this source may be not very large, yet it is too important to be sacrificed for lack of a little wholesome interest and attention.

Fowls, like other living creatures, require a lodging. Royalty, nobility, and so on, may build palaces of stone-work, with verandahs, cupolas, fancy castings, ornamental wire-work, glass, &c.; but birds, though beautiful themselves, are not gifted with æsthetic taste, and there is no need whatever for their home to be picturesque and genteel. Do not make any erection ugly, when the cost will be little more for a design that will be pleasant to the eye; but beware of building a sumptuous residence that might easily swallow up in interest all the profit you can hope to make by its inmates. The shelter adapted for a farmyard, and for a farmer who earns his living, need be only of a very simple description. Arthur Young prescribes, in his "Farmer's Calendar," that, if a woman is kept purposely to attend to the fowls, she should have her cottage contiguous to the fowl-house, that the smoke of her chimney may play in the roosting and sitting-rooms, poultry never thriving so well as in warmth and smoke—an observation as old as Columella, and strongly confirmed by the quantity bred in smoky cabins in Ireland. This is all very well, barring the smoke. What we should study is a warm situation and aspect, sheltered from and shut against north and north-east winds, with no sharp draught through the house, yet with a sufficient current for ventilation; and the higher the apartment the healthier for the birds. I think a plain structure of studs and weather-boarding quite as good as a brick building, the main defect in most farmeries being the small number of separate rooms and houses. It is not sufficient to have a sitting-house, laying-house, and roosting-house for hens, a house for turkeys, another for ducks, and so on. Fowls require separation, according to sex and age, and you cannot have too many houses, boxes, and pens about your premises, in order to accommodate all. The roof should be perfectly weather-tight. The floor is not so well of brick or stone slabs as of earth well rammed down and covered with loose gravel. This is to avoid harbouring the great pests of the hen-house, fleas. Dimensions will be very much matters of fancy, but shun overcrowding. Architects often plan roosting-houses with perches one higher than another, rising like a ladder from floor to ceiling, taking care that one is not placed directly over another, as in that case the droppings of the upper row would fall upon the birds below. But all lofty perches are objectionable; heavy fowls injure their feet in jumping down; for, though they will fly up or walk up a ladder to bed, they will generally take the shortest cut down in the morning. The best plan is to have perches all on a level, two to two-and-a-half feet from the ground; the best perch being a wooden bar of three or four inches in breadth; and, if supported by legs like a stool, so as to be readily moved, so much the better. Clumsy birds, like Cochins, prefer a roost at even lower elevation, unless a very easy ascent is prepared for them. It is not necessary to have a separate house for laying, provided the nests be at the side, far enough from the perches. But a sitting-house should be prepared, in order that the sitting hens may not be disturbed by the other fowls. I need scarcely urge the importance of cleaning out the houses, say twice a week, and of once or twice in the summer cleaning and limewashing the whole of the interior. Various notions are seen in the matter of nests. Some poultry-keepers have a number of wooden cells, like pigeon-holes on a large scale, with a hinged flap or door, or a slide, in front, to fasten in unsteady sitters and to keep out intruders. The nests in my own hen-house are simply rectangular cells made of board 20 inches high, and 18 to 20 inches long and broad, set upon the floor and close to the wall—a bar running along the front edges of the boards, to keep the eggs from rolling out. But round shallow dishes of wicker are good; so also are shallow pans of earthernware half filled with sand; and some managers prefer simple cells of loosely-laid bricks. As to the proper fibrous or other material for bottoming the nest, avoid long straw, for this is liable to pull eggs out of the nest by getting entangled about the hen's legs. Hay, again, is safer, but harbours abundance of vermin. The best materials are cocoa-nut refuse or short straw, dusted with flowers of sulphur to expel fleas; while a sod with rough grass on it makes a good and moist foundation for all. Where you have several sorts of fowls, of course you must have a number of distinct houses, each with its small enclosed "run," or yard. Wire netting, eight feet high, will keep in most breeds, and you must have close boarding at the bottom, two feet in height, to prevent the cocks pecking each other, and to keep birds of both sexes from spoiling their heads in the sharp meshes. But one of the greatest points in poultry management, even when you have only one sort, is to avoid congregating many birds in one building, or upon the same ground; neglect of this precaution often bring disease that depopulates whole yards. If only a single farm-yard is at your disposal, and your cottagers are afraid to take in young broods on account of their scratching propensities in gardens, you had better put up little houses, like enlarged dog-kennels, remote from one another, in all parts of your grounds, as spaces about plantations, shrubberies duly fenced from the flower-garden, and so on. Here place little colonies of chicks when their mother forsakes them, and you will be surprised how fast they will grow, with good feeding added to the myriads of insects and seeds which they glean from their apportioned run. People have fancies about coops and ripe. My hints, are, have them large enough, cheaply constructed, able to keep out the rain without requiring pieces of old sacking to be thrown over them, and closed at the ends as well as at the back. You may add a wire fromt, to be shut at night against weasels and rats.

You can buy some of Mr. Baily's nobby poultry fountains; but, if you are not afraid of breakages, crockery ones will do. Or you may use a large flower-pot dish, with a flower-pot placed inside it upside down to keep the chickens and ducks out, leaving a ring of water for them to dip their bills in, Fowls want also a dust bath; that is, to say a box, or what is better, a glazed earthenware pan, of fine sand and wood ashes; in this the birds "rootle," dusting their plumage, and dislodging and destroying parasites. It is always well to have bricklayer's rubbish, slaked lime, burned oyster shells, coal ashes, and gravel lying about a poultry-yard; besides being sweetening and sanitary, they afford the birds pieces of hard material, as fine stones and bits of mortar, so indispensable for the milling action of the gizzard.

I come now to the general management of fowls. When you keep hens for their eggs only, the proportion of hens to one cock is immaterial, infertile eggs being as good as others for the egg-cup and for cookery. It is best, however, to let twenty or thirty hens follow a champion and protector, who takes care of them, finds food for them, and often, with true gentility, sees that all are supplied with pickings and scratchings before partaking of anything himself. For breeding strong, healthy chickens, give only six or eight hens to one cock, though a young bird may have ten. The old-fashioned plan is to breed in-and-in from the strongest "cockerels" (that is,cocks in their first breeding year after arriving at the adult age of six months); rarely introducing a purchased bird for "change of blood." But prize-poultry men know very well that a dwindling progeny is a sure result of breeding from closely related fowls, while there is no more common cause of disease. A cock will work well for a couple of years; if he be a favourite you may keep him three years, if the young birds do not "whip" him and wear out his life. My practice is to keep sixteen females in a farm-yard with a second-season cock (or "stag") and a young cockerel for his first season; this difference of age ensuring the mastery to one of the warriors, and so preventing repeated and desperate duels. It would be far better to place the two cocks, with eight hens each, in separate yards—so avoiding innumerable bad eggs. A pullet hatched early in spring begins to lay at the approach of winter, and pullets hatched late in summer begin to lay in the ensuing spring; and it is by saving a certain proportion of pullets from the early and late broods that you make sure of winter eggs, a few very early-hatched chickens for catching the highest markets, and a numerous flock of chicks throughout the warm months, when rearing is least precarious. The hen continues in her prime for two and, at most, three years; therefore, save every year pullets equal to say a third of your brood stock, selling off at a trifling price the same number of aged hens, or offering them up in a stewed dish or well-baked pie. However, I make no scruple about keeping a heavy, symmetrically-made, splendidly-feathered "partlet" for four years for the sake of her stock. Many farmers grumble about their poultry, from not paying attention to such a simple matter as looking over their brood stock once a year, drafting all the old dames, known by the developed scales upon their legs, and reserving from the market-basket the most promising young pullets raised during the season.

In a general way, it is not worth a farmer's while to try for very early chickens. For midsummer-show purposes, and in the neighbourhood of large cities, where 10s. or 12s. or more per couple can be obtained for extremely forward birds, it may pay well, but the labour and trouble demand great perseverance. A pullet saved from an early "clutch" will lay in December, and hatch in January or early in February; but she must sit on only seven to nine eggs, and if she hatches half-a-dozen chicks, you may consider it very good luck for that cold season. The clutch must be shut in a warm room, with dry earth, gravel, or ashes to run on, as a stone or brick floor will cramp the chickens' legs almost as surely as wet earth or grass. The nights are so long that the time between one daylight feed and the next would be starvation to the tender little creatures; so that you have to feed by candle-light (without ever omitting) late at night and early in the morning, laying the food upon a black-painted board, and shining the light upon it while the chicks are pecking. March, April, and May hatching is a much easier matter, and the second brood (for a good sitting breed hatches twice, sometimes thrice, in a year) will come in July, August, and September. Late hatches should be avoided.

As laying-time comes on with the opening year, when the combs of the pullets begin to redden and their bodies enlarge, be diligent and liberal with your feeding; more particularly because frost and snow often deprive the birds of their "shack," and insects, worms, &c., being scarce, animal diet should be provided in their place. Of course, grain is the staple food—as whole corn, with tail wheat that usually has much "split" among it, and a proportion of bruised oats. Mashed potatoes, "cree'd" rice, soaked bread, garden vegetables, make good changes in the diet; and paste of barley-meal or oatmeal, &c., is advisable for getting up and preserving "condition." To promote laying, give the hens the bones and scraps of meat and fat from the dinner-table; indeed, waste nothing eatable out of the kitchen and pantry, and do not scruple to rob the pig-wash tub in favour of your fowls. A capital addition is a quarter of a pound of horse beef among half-a-dozen hens, given three times a-week. And bullock's liver, and again sheep's entrails, boiled, chopped, and peppered, are supplied with excellent effect. Keep to regular feeding hours, twice a day being sufficient, but three times all the better (I am speaking now of adult fowls), and scatter no more food than the birds will eagerly and quickly devour. Extravagance leaves half the provender to be gleaned up by flocks of sparrows, and makes poultry-keeping expensive.

Look up eggs daily, or oftener if you please, for fear of thieves, or of frost in its season; of course leaving the necessary nest-egg. And you may use pieces of chalk, porcelain eggs, or eggs turned in wood and painted white, to entice the hen to her nest. One of the annoyances of fowl-keeping is being deceived by your eggs, having to throw them away rotten from under the patiently sitting-hen. Perhaps you cannot always guard against this evil. For the sitting-house may be warm enough, the nest not too dry, the eggs well preserved and not too old, and yet failure ensue. In fact, cold weather will sometimes conspire against your management, and eggs will be infertile in spite of your proper mating of the sexes, your careful treatment of the eggs, and your good feeding of the sitting hen to keep up the warmth of her body. But at any rate adopt every known precaution. Avoid shaking the eggs when selecting them; place them in boxes in preference to drawers, which shake all your eggs every time they are opened and shut. The slightest touch of frost is fatal; so place the eggs in bran or chaff, laying them on their side, and turning them once every day: because the hen almost always brings off a full clutch when she has "stolen" her nest in some secret retirement, and her eggs are laid on their side and turned about by her getting on and off her nest. A good plan is to pencil-mark the day of the month on the side of each egg when you put it by; then you turn the marks down one day, and up again the next; and you can see the age of every egg you select for sitting. The fresher the egg the better; still you must always have a sufficient number in reserve, lest several hens should want to sit at one and the same time. Eggs for consumption may be packed in bran or in salt, or kept in lime-water, for almost any length of time, placed with the small end downwards. Of course the parentage of an egg is the main point in determining the probable character and quality of the bird; but the size and shape are of some importance. Small rounded eggs, laid by pullets, may bring fine birds; but their earliest eggs are not worth setting. Choose an egg of medium size (an extremely large one may contain two yolks and prove an abortion), well formed, without any rib or flaw, and with the air-vessel distinctly marked at the top of the egg when this is held end upwards between the eye and a candle. Some persons pretend that the air-vessel when in the centre foretells a cock, while towards the side it betokens a pullet.

When a hen is "broody" or inclined to sit, she clucks, as if calling chickens—which, perhaps, she sees in imagination; and a young pullet had better be proved with an egg or two whether she is a steady sitter, lest a seat of valuable eggs should be spoiled by her forsaking them; though eggs are not always ruined by getting cold after a few days' sitting. Cruel means are sometimes resorted to for making a hen sit when she is not disposed, and still more unfeeling practices are adopted to prevent a hen sitting when she is wanted only for egg-laying. But I strongly condemn all attempts at confining a poor bird, and making a mother of her against her will; while the prevention of sitting is easily accomplished (in case a set of eggs turns out rotten and the hen persists in her expectation of chicks), by continually disturbing the hen, shutting her up where she can find no eggs, and by cooling her incubation fever with a cold-water bath. To make a hen sit in the place you choose for, you have only to take her from her stolen nest at night, and cover her over for a time. Re-line a nest before setting a hen, sprinkling a little sulphur to banish eas as much as possible; and it is well to barricade her at rst against being disturbed by other birds. The proper numer of eggs in spring and summer will depend upon their size nd upon the size of the hen, ranging from eleven to sixteen, r even more. The hen will commonly leave her nest every ay for food and water; but if you have boxed her in, you ust take her off once a day, and bear in mind that as she has ow no exercise to aid digestion, the food should consist of a ttle hard, but principally of soft substance, as oatmeal, or urley-meal paste, chopped cabbage, lettuce, and so on. If ou find later eggs in the nest, remove these unmarked eggs, eing that they would not hatch simultaneously with the hers; this point, however, requiring most attention when you ave cross-bred hens among others of some valuable breed. ook the date of each sitting, and on the ninth or tenth day amine the eggs (in Lincolnshire we call it "shiring"), by olding them between your eye and a beam of light—as a adle in a darkened room. If an egg is right, it will appear uite dark, except a small clear disc at the top; if the egg pear semi-transparent throughout, it should be taken away, it is infertile, would probably become rotton, and yet, at is stage of the proceedings, makes a good dinner, boiled hard d chopped up, for a brood of chickens. The hen sits twentye days, generally sitting very closely during the last week; t if through any accident the eggs are left to get cold (in at week), the birds may sometimes be hatched by another n, or by artificial warmth. To avoid the common disapintment of chicks dead in the shell, damp the eggs daily ring the last week, either dipping eggs in lukewarm water, or sprinkling a little cold water on the eggs from a brush. oistening the porous shells prevents the living membrane om becoming so hard and dry that the poor little chick cant break through it; and you need not be afraid of the eration, as a hen generally damps her eggs in a stolen st from getting her feathers trailed in wet or dewy grass d herbage. Look frequently at a hen as her terms draws to end—taking away any rotten eggs which might explode d kill a half-hatched chicken; and remove the earliest ickens to prevent the mother running off with them and aving the rest to die in the shells. Young managera are wont feed their new-born treasures too soon, as if fancying that e little prisoners must be hungry, because they had nothing eat all the time they lay doubled up in their shell. But the le is—no food of any kind for twelve hours; all they want is eat. Beware here of old wives' nostrums. If a baby is born, must at once learn that it has entered into a world of drugs, swallowing a dose of castor-oil, just "to clear its little omach." If a cow calves, she cannot prosper until she has ten the placenta; and a chicken must not only have the nib ken off its beak, and the beak dipped in water (which is all ght enough), but must have a nasty, hard, black pepper-corn rced down its throat—I suppose to be conducive to its misery d destruction, by at once irritating and weakening the digesve organs. Give the chicks plenty of bread soaked in milk, few bread crumbs, and roughly ground wheat-meal, wetted ith lukewarm milk (skim-milk will do), of such a consistence at when a little ball or pellet of it is thrown upon the ground will break and scatter about in particles. After a few days ary the diet with cheap chicken-rice, cree'd soft, and a scanty llowance of whole corn, which should be the fine, small creenings of wheat. Vegetables—as cabbage and onion tops hopped fine—make a nice admixture with other food (potato, owever, is too scouring); and every other day you may give ach clutch a hard-boiled egg or a little mutton suet, chopped ne. In fact, study frequent changes of diet. For the first ortnight chickens need almost hourly feeding. If they have a ood "run" among grass and shrubs in warm dry weather, hus picking up abundance of insects, they will want proportionately less food; but never offer them more than the agerly run after. Both hen and chickens must have clean, ften-renewed water within reach, arranged so that the hickens cannot get their legs in, and so that the hen cannot pset it. Let the coop be daily moved to a fresh patch of round. In warm weather, the hen, after the first week, may e let out during the day, provided she be a good mother; for ome wild and tiresome hens will trail their little ones to eath, over-walking the poor little things, and at least hindering heir growth. In cold or wet weather coop close, and place he clutch in a house at night. The length of time for cooping (say two to four weeks) depends upon the weather, the vigour of the chickens, and the quiet or straying habits of the mother—some hens being awkward in a coop, trampling very young chicks to death, and so requiring plenty of room or earlier liberty. When two hens come off at the same time, let one take both broods, if in summer, that the other may lay again the sooner; but in cold weather, one small clutch is plenty for one mother to cover and find food for.

A common error is to coop successive broods in the same small enclosure, probably because this is near to the kitchen-door, and convenient for the constant attention which is required. But separation is a main point in rearing healthy birds. Distribute your coops about your yards, of course choosing safe and sunny places; and if your early broods occupy a space before your house, you may put the later broods on a plot behind, and so on, always allowing a coniderable interval to elapse before following upon the same ground, to avoid getting the walk "tainted," as it is termed, with liability to disease.

It is a modern practice to separate the sexes at two months old, or earlier, sending the cockerels to a yard by themselves, as they are found to thrive better, and live together without quarrelling. And here comes in the advantage of having several yards at considerable distances apart; in fact, separate poultry establishments upon the same farm, which may often be contrived in connection with bailiffs' or labourers' cottages.

A well-fed fowl taken from the straw-yard is very nice eating; but beyond this, you may have a very heavy and thoroughly fat, as well as delicately-flavoured fowl. This is when they have been "put up" to feed. At three or four months old—younger in summer, and older in winter—shut the fowls in a confined space, as a coop or hutch, giving the birds room to sit or stand, but permitting them to turn round and move about only with difficulty; the bottom being made of longitudinal round bars, on which the fowls perch, and between which their droppings fall. This coop must be under cover, and in a warm and rather dark place. A V-shaped trough, of wood, or better, of earthenware or glass, is placed along the front of the coop, receiving three times a day as much food as the birds will eat at once, and being immediately afterwards cleared out. Mr. Baily prescribes oatmeal and milk, mixed slack, but not quite liquid, the consistence being such that, if some of it is placed on a board, it will slightly spread. Fresh water should be accessible in pans, and a little gravel given occasionally. It is indispensable to feed at sunrise, the birds making no progress if suffered to get hungry. Their term of confinement should be a fortnight, or rather less, if they were in good condition when put up, and if they have been kept quiet, without any introduction of a strange or a quarrelsome companion. It is not often that the birds will preserve their health for three weeks of such treatment.

Cramming is not a refined practice; but as money is made at it, and the punishment to the fowl is not worthy of mention in comparison with the horrors of caponizing, I must describe it. The oatmeal is mixed considerably stiffer than as last mentioned, and the milk of which it is made may have a little mutton-suet boiled in it. The paste is formed into "crams," rolled up dry, each as thick as a little finger, and nearly a couple of inches long. Six or eight of these elongated boluses are administered morning and evening, being dipped in milk or pot-liquor, to make them go down "slick" and easy.

Mr. Baily's description of cramming is as follows: "The fowl is placed in the lap, the head is held up, and, the beak being held open with the thumb and finger, a cram is introduced into the gullet; the beak is then closed, and the cram is gently assisted down, till it reaches the crop. Care must be taken not to pinch the throat, as ulceration would follow, and the fowl would be spoiled." Water and gravel should be provided, for the birds to help themselves; and if they seem to require it, a little food may be placed before them at mid-day. "Before the second feed is given, the crop should be lightly felt, to ascertain if it is empty. If not, the morning meal has not been digested. The fowl must be taken out immediately; and the beak being held open, as if for cramming, some warm water or gruel should be poured down the throat, and the beak closed. This will soften the food; but if more food were forced into the crop, on that already hardening there, the bird would become crop-bound—*i. e.*, the food would become solid and indigestible, and the fowl would be totally spoiled for the table, if it did not die." A machine on the principle of a force-pump has been employed, by which one person can cram a dozen birds in seven or eight minutes.

You judge the fatness of a fowl by feeling if the breast is plump. The skin under the body should also be thick and fat, and fat may also be felt under the wings. Cadgers in the poultry-markets are accustomed to nip the rump laterally with the finger and thumb: it should be thick, fat, and firm.

When you have successfully bred, reared, and fattened a prime young fowl, that is to be a delicate dish on your table, it is very disappointing to have all your pains nullified by the indiscretion of a cook. Tenderness is a quality that can be secured by keeping the bird long enough between the slaughtering and the spit; and, to make it keep well for a couple of days in summer, or much longer in cool weather, fast the fowl twelve hours before bringing him to the knife.

On the subject of diseases I shall add little. Poultry-books are generally half-full of diagnosis and remedies; but in few farmyards is a troublesome manipulation of cocks and hens, or an elaborate preparation of pills and drinks, likely to be followed up. A great deal of quackery, as well as a great deal of learning, has been printed on this subject. You can consult some of the valuable handy books which great authorities have published; and all I can do in this brief lecture is to point out a few of the commonest ailments, with the most effectual modes of treatment. For diarrhœa, mix Cayenne pepper and chalk in gruel, or with meal. If a purgative is required, give a teaspoonful of castor-oil, or a little jalap made into a pill with butter. For indigestion, when a chicken is suddenly taken with a convulsive fit, the legs straightening out, and the crop hard, poor warm water down the throat, and next day feed on soft food. For mange, or loss of feathers, scarring of the comb, etc., give small quantities of sulphur and nitre, mixed with butter. When birds suffer too much, and are long "on the moult," try a little extra stimulating diet, as hemp-seed, buck-wheat, animal food, and that great restorative, bread soaked in ale. When chickens get the pip, gaping, with a horny excrescence on the tongue, tear off the hard substance with your thumb-nail, administer pills of rue and bread, or made of scraped horse-radish and garlic, with a grain of Cayenne pepper, and supply plenty of clean water. Roup is a very dangerous and infectious malady—a very plague among fowls. The premonitory symptom is, that the skin hanging from the lower beak, and to which the wattle is attached, is inflated and emptied at every breath—the same hoarseness and difficult breathing as if from a cold. Give a table-spoonful of castor-oil; and a few hours after, one of Baily's valuable "roup and condition pills." If there be rattling in the throat, with a fœtid discharge from eyes and nostrils, wash the eyes, nostrils, and inside of the mouth with vinegar. Mrs. Ferguson Blair gives this prescription: "Take of dried sulphate of iron, in powder, half-a-drachm; capsicum, in powder, one drachm; extract of liquorice, a sufficient quantity to make a mass, which is to be divided into thirty pills. One to be given three times a day, continued to the end of the third day, and then followed by a second prescription. This is: Half-an-ounce of sulphate of iron and one ounce of Cayenne pepper, in fine powder. Mix carefully a teaspoonful of these powders with butter, and divide into ten equal parts, one to be given twice a day." Gapes is another common disease, arising from small white worms in the trachea. Grain, wetted with spirits of turpentine, is one medicine; camphor in the drinking-water is another; but a complete means of cure is of a surgical kind. Take a hen's tail-feather, stripped all but an inch at the end; put it down the bird's wind-pipe (not the gullet), twist it once or twice round, and withdraw it, with the worms adhering. This is an operation, however, "more easily said than done."

A descriptive and historic account of the various popular breeds, with the special purpose for which each may be valuable, does not come within the present lecture:* and I now proceed to offer a few hints about other poultry beside fowls.

Ducks, clever as they are at taking care of themselves, are somewhat difficult to manage, as far as "good luck" with sittings is concerned. The wild-duck being monogamous, shows that only a few ducks should be allotted to one drake—say five, or at most six; four would be all the better. As the treading generally takes place upon water, the duck diving at the time, the birds must always have free access to their favourite element, not necessarily in a pond, for a tub a foot and a-half deep will suffice. And as they are of very early habits, you must either provide a tub of water in their house, or else let them out very early in the morning. Certainly there are few districts where it is safe to leave ducks out in a yard, or wandering "worming" about the pastures all night. *Apropos* of the tub, bear in mind that a duck *can* be drowned as readily as any other animal; for, if too long in the water, with the feathers saturated, the poor bird will sink; therefore, form your tub so that the ducks can easily get out. Ducks are wonderfully fastidious about their nests. In frosty weather you must take away the eggs; and, as the duck will lay thirty or forty eggs, you can hatch them under hens, which, indeed, make by far the better nurses. March is early—April a better month for ducklings to come off, as they like warmth no less than water. The duck must be closely cooped for the first week, or she will soon tire out, and so kill her young; she must be apart from any other duck, to prevent the little ones going to the wrong coop, and being seized by the wrong mother's sharp bill; and she must be away from pond or stream, lest the ducklings should get their legs cramped with the cold. Let the duck have a saucer or dish to drink from; and let the ducklings paddle in a shallow tray, placed a yard or two from the coop, to prevent accidental slopping and soaking of the tender little birds. In very dry, warm weather this discipline need not last more than a few days; then move the duck and coop to the margin of a pond (still apart from other ducks, as some ducks, and drakes too, are very vicious, and are apt to kill off a whole brood in a few minutes); and when the ducklings are a fortnight old, they may be separated from their mother, driven to the water in the morning, and shut up in a house at night. Beware of having deep pans or buckets of water where ducklings and chickens can have access to them; keep none but very shallow drinking vessels for your poultry; empty your stable-buckets when not in use, and float pieces of board in your horse and cattle water-troughs. The first food for ducklings is bread soaked in milk, or paste made of barley-meal and new milk: malt-flour is also used, as more fattening. You may give also boiled rice and potatoes, and small wheat soaked, with frequent treats in the way of flesh. But with muddy ponds to luxuriate in, they need little else than an opportunity of filling their crops with meal paste.

Turkeys require very great care and attention; yet, where the hen-wife makes them her pets, and studies their welfare in every way, she at any rate (whatever the farmer himself may say) may find them profitable. The turkey-hen lays one egg every thirty hours, and should be set upon a dozen eggs, and fed with corn and water. She sits a month. When the chicks come off—taken one by one as they escape out of the shells, and wrapped in flannel—they are commonly made to swallow a peppercorn each, as well as to drink a little water: they need no food for twenty-four hours, and will then pick what is placed before them. Their food should be hard-boiled eggs chopped very fine, or curd with bread-crumbs, and boiled nettles, and green onions finely minced. Coop the hen for a fortnight, and then let her ramble with her young, being warmly housed at night, but beware of the least wetting by rain. A critical time with them is at a little over two months old, when the male and female markings begin to appear, and the birds are called turkey "poults." Boiled vegetables, meal, grain, and various seeds are employed in feeding them. After harvest, they will range the stubbles; and many henwives "top-up" their favourites by cramming for Christmas markets.

I conclude this imperfect lecture with two or three hints on the management of geese.

A gander should be mated with three geese—certainly not more than four; and perhaps two would be a luckier number. In her first breeding season, the goose has few goslings, but after that remains in her prime for years. She lays twelve to twenty eggs, but, with high feeding, will sometimes lay thirty, or even forty. You should get two hatches in a year. In the middle of February, the goose is commonly inclined to lay, and evinces her condition by running about with straws in her mouth, as if nestling. Watch her, and when she drops an egg, take the goose and the egg, and fasten her for a while upon the place you have prepared for her laying and sitting,

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* The lecture was one of a series.

A few boarden boxes, with straw-thatched top, answer very well for geese, and are best placed beside a pond, and in a sheltered situation. She may sit upon from ten to fifteen eggs, according as she is a young or old bird. Her time of incubation is one month; and a little aid in breaking the shells is sometimes necessary; but beware of making the partially spretched gosling bleed. If one goose comes off just about the time another is due, fasten the latter on her nest, to prevent her, perhaps, leaving her eggs to spoil upon hearing the "croodling" cry of her neighbour's young ones. The goslings want no food for twelve hours; then give bread soaked in milk, porridge, curd, greens, chopped cabbage, bran mixed with boiled potatoes, &c., and provide a sod of grass for the little bills to pull at, with plenty of water for them to drink. Keep them out of the water for a few days, sunshine being their best food, and rain their fatal enemy. Shut them up for some days; and when they go out, watch them in windy weather, as a gosling blown upon its back cannot get on its legs again, and will die.

Grass and herbage are the main food of geese; but fatten them upon oats and meal.

A goose put up to fatten eats a pound of oats daily for the first week, and three-quarters of a pound daily afterwards—a goose in good condition off stubbles being fattened on oats and water in three weeks.

When a goose's feathers are "ripe," they should be plucked off—an operation that gives little pain to the bird if properly performed, and at the right time. The feathers under the wing are always left to hold up the wings, which would otherwise trail upon the ground. It is usual to pluck three times in the season, one goose yielding a pound of feathers in the three pluckings.

In some well-watered districts geese are profitable, and in a very growing season they do little damage to the pastures. In dry summers, however, they are very injurious, pulling up much good herbage by the roots, and, what is worse, in badly-watered localities, fouling and spoiling the ponds for horses and cattle.

In conclusion, I would say that a short lecture must not be taken for an elaborate handbook, though I trust you will find in it some useful hints for your guidance.—"*Practice with Science.*" *Long Sutton, Lincolnshire.*

AUTUMN CLEANING AND CULTURE.

When the great importance of this subject, and the advantages to be derived from it are taken into consideration, it is really wonderful how much it is neglected, and how little interest some of the tenant-farmers of this kingdom take in a matter so productive of good to their land and crops and so vitally essential to their own interests. Next to a thorough system of drainage, perfect cleanliness is the most necessary operation, as, however well manured, no crop can flourish satisfactorily if robbed of its full supply of nourishment by a mass of useless and exhaustive weeds. That thorough cleaning is not attended to as earnestly as it ought to be by the agriculturists of this country is abundantly proved by the appearance of the fields during the summer and autumn months in almost every district. Corn, green crops, and pasture land alike are infested with thistles, docks, couch-grass, and rag-wort, to such an extent, on pastures particularly, as frequently to make it a matter of surprise how the animals can manage to pick out their food from amongst them. It is not alone on the poor and badly-farmed districts that such a disgraceful state of matters is noticeable: they are to be met with on the very best land—land so valuable, in fact, that it might naturally be supposed neither trouble nor expense would be spared in eradicating every weed, everything that would interfere with the crop, and prevent the land from yielding its increase. It is strange that so much apathy exists in the mind of the agricultural public on this matter, as there is no investment capable of giving such a large per-centage from land as the capital spent in cleaning it of root-weeds. When once this has been well done, very little labour is required to keep a farm clean, the ordinary preparatory operations for getting in the crops being, in most cases, sufficient to do so.

In the matter of pastures alone the loss to the country is exceedingly heavy, on account of the dirty state of the land when laid down with grass-seeds and clovers. In the first place, half of the seed sown does not grow, and the portion that does germinate is speedily so interwoven with weeds as to be able to maintain but a very struggling existence, and gives scarcely one-fourth of the feeding that under more fortuitous circumstances it might reasonably have been expected to have done.

There is scarcely a district in the kingdom but where instances of extreme carelessness and inattention to this matter are to be met with in abundance. In Ireland, however, it prevails to an extent probably unknown in either England or Scotland. Although much improvement has taken place in this respect during the last twenty years in that country, much still remains to be done.

Many farmers, and in some districts they are neither few nor far between, have not even got the length of sowing the usual mixture of grasses and clovers, but trust to the weeds alone for pasture, letting the land lie for a few years to recruit, to be again turned up, and put through a most exhaustive rotation, principally of white crops.

So good is the land in some of the Irish counties, that no less than three white crops are sometimes taken from pasture such as this, before it gets any kind of manure. Potatoes are then grown, after which wheat, then a crop of black oats, after which it is left to Nature as before. When land is so naturally productive as to give good crops under such miserable treatment as this, what might it not be supposed to do under a thoroughly well managed six-course rotation? However well-circumstanced land may be in every other particular, it is absolute folly and throwing away of money to sow good seeds on any land that has not been well cleaned. A middling crop of hay may be got the first season; but during the remaining years of the course, the grazing is often so bitter from the presence of couch and inferior grasses as to be refused by the animals, unless almost starved into eating it, and consequently is comparatively worthless. After a farmer has taken the trouble of eradicating the weeds from the land he intends laying down (the proper time to do which is of course in the cultivation of the green crops), there can scarcely be found a more pleasing sight than a good hit of rye-grass and clover—a contingency which will seldom ever fail to ensue when the necessary conditions have been properly fulfilled. The seedsman is often blamed for the partial or total failure of the cultivated grasses, when the cause is much nearer home, and rests solely with the farmer himself in his having neglected to render his land sufficiently clean for their reception.

In the cultivation of green crops, although there is much improvement of late years, there is still a great deal to be done in respect of keeping them free from weeds, the crop being frequently so thickly covered with them at thinning-time, as to make it a matter of difficulty for the workers to distinguish which to pull out, or which they should permit to remain. The enormous extra expense entailed upon agriculturists by the cleaning and thinning of a field of turnips which has been neglected previously, and the root-weeds allowed to obtain a firm hold of the soil, ought of itself to be sufficient inducement to wage constant war with those persistent enemies, until they are completely overcome.

It is natural for the soil to produce weeds—"Thorns and thistles shall it bring forth." Man cannot alter this universal law of Nature; but, by the exercise of foresight and labour judiciously applied, he can overcome it, and so "by the sweat of his brow" the means indicated by the Great Ruler of the Universe turn the curse into a blessing.

The period of the year during which the land can be most effectually and economically cleared of weeds is autumn, immediately after the corn has been taken from the fields, and all harvesting operations brought to a close. So anxious are some farmers who are devoted to this system, that they actually begin amongst the stooks, setting them out in such a manner as that a portion of the ground can be gone over previous to their removal. The object of this is to get the business over while the sun's rays are still powerful, the vitality of the weeds being then much sooner destroyed than would be the case at a later period of the season. It would be difficult to over-estimate the value of autumn-cleaning, the saving in both hand and horse labour being immense, and the work being much more efficiently performed than it could possibly be the case in spring. The reasons for this are various; but the leading one is as follows: During the summer, when the corn is growing, even if there should be a considerable amount of root-weeds present in the soil, the shade of the growing crop necessarily weakens them and retards their progress. When, however, the corn is cut and removed the weeds get abundance of air, and, having the land all to themselves, at once begin to increase and multiply, and before many weeks have elapsed will have sent their runners through every portion of the soil, the surface thereof becoming in extreme cases as thickly matted as if it had been several seasons in grass. This statement is by no means overdrawn, as examples are too frequently to be met with. During the month of October last year we saw, in one of the most famed districts of carse land in this kingdom, a large field of wheat-stubble belonging to a wealthy proprietor, just over-run with couch—so bad, in fact, that without a paring-sock in front of the plough, the weeds could not be covered. Anyone conversant with agriculture can fancy the difficulty of preparing such a field for a green crop in the spring. To do it properly, it would require a summer-fallow. Were this, or any other field in the same state, attended to when cleared of the corn, the noxious weeds, instead of flourishing vigorously, and absorbing the substance of the land, would have been thrown out, and withered on the surface, and not only help to manure it when ploughed down, but assist to keep it open, and thereby enable it to benefit largely from the action of the weather during the winter months. Ploughing-down foul stubbles, with the view of getting rid of the weeds, is very bad policy, and defeats its own object. Couch, in particular, is largely benefited by the operation: the plants, being separated by the action of the plough, are divided more equally than they previously were over the land, and, in a very short period, take undisputed possession, showing the farmer that it has done so, by appearing in a green line on the surface of the soil between every successive furrow. By autumn cultivation, not only are the root-weeds got rid of, but even a large proportion of annual weeds are eradicated. The soil being rendered extremely fine, if the seeds of annual weeds are present in considerable quantity, they at once germinate, and appear on the surface in a few days. When turned down by the plough, they are completely destroyed; and thus, by a very simple process, millions of seeds are got rid of, which would have formed a source of great trouble and annoyance in the spring, at which period they would have to be got out by the expensive process of hand-labour.

Cleaning the land intended for green crops during the end of autumn, amongst other advantages, has therefore much to recommend it on the score of economy, as it can then be done entirely with the horses, no hand-labour being necessary. The horses have their work better divided, as, by putting a portion of it past in autumn, it is greatly lightened during the spring months; and they do not require to be dragged to death, as is too frequently the case, where the stubbles are merely turned over in the winter months, and the whole work of cleaning and pulverization left over until spring. The work being light, there need be no working during bad weather, or going on to the land too soon after a heavy fall of rain. The work being always forward, the horses can be allowed to rest quietly in their stables until the land is in a fit state to carry them, and permit of ploughing, harrowing, &c., being carried on satisfactorily.

On the subject of economy of labour resulting from autumn-cleaning we can speak with the utmost confidence from experience. Some years ago, when women and children could be had at the very moderate rate of from fourpence to eightpence a-day, a farmer could have a good large gang, and his outlay be but comparatively little after all; but of late years, when they must be bribed by much higher wages—and even with that are rather erratic in their attendance—the expenditure and annoyance to those who still depend upon such aid have become almost insupportable. During the spring and summer months, we used to have from fifteen to twenty women and young girls employed constantly in collecting weeds after the harrows, when preparing the land for green crops, and hoeing and weeding them as they progressed in the different stages; and, after all, it was an impossibility to keep the land clean.

Now that the entire turnip break (about forty-five acres) is gône over immediately after the removal of the grain crop, the cleaning is effectually performed, the plants hold undisputed possession of the soil, instead of merely sharing with, and struggling for bare existence with weeds; and, last of all, the permanent staff of women, as field-workers, is reduced to four. There are people still to be found who object to such a wholesale clearing-out of labourers, and consider (or affect to do so) that the introduction of machines cannot add to the prosperity of a country, when the first effect they have is to throw the working population out of employment, or, at least, to materially lessen the demand for their services. In the case of young girls, anything that shuts field-work against them, by lessening the demand for their services, ought to be hailed by them as a boon, as they are thereby compelled to look for other means of living, generally turning to domestic service, and finding in it far more congenial employment than working in the fields, exposed to the burning sun of summer and withering blasts of winter.

Land that has been well cleaned in autumn requires very little care in the matter of hand-hoeing during the following summer; the horse-hoes and drill-grubbers, when kept constantly going amongst the drills, whilst they can do so without injury to the growing crop, being mostly sufficient to keep the land thoroughly clean. The few inches on each side of the drill, which it would be dangerous to disturb with the horse-hoe, can, in general, be done effectually enough when the crop is in process of being thinned, by a little extra attention on the part of the operator, and save not only money, but time, which is equally valuable.

In cleaning land immediately after the removal of the corn crop, if the farm is not a large one, the common plough will do the business admirably, all that need be done being to have a rather broader wing put on the sock than is usually required in ploughing. A breadth of from nine to twelve inches may thus be successfully pared, and the work being light a pair of horses will get over a considerable amount of surface in a day. Small occupiers who have not tried this plan may possibly imagine that it would involve too much trouble to go over their stubble land in this way previous to ploughing them down, but where the extent is not great it would not be worth while to have an implement specially for the purpose; and by using the plough the paring can be done in a very business-like manner at an expenditure neither of very much time, trouble, nor money. The after-benefit to the land, and the saving both of horse and hand-labour in the spring, will amply compensate the farmer for any extra trouble or outlay he may have gone to in autumn. How frequently are small farmers, and for that matter, some extensive ones too, seen picking up the weeds during the spring season and burning them at a great sacrifice of time during the very period of the year when it is most valuable. By proper management there ought to be no weeds to burn in spring, and there would be none if farmers would spend a little time and labour judiciously in paring their stubbles and shaking out the weeds during the autumn. Although by no means recommending the plough as the proper implement for this important process when there is much to be done, we cannot help mentioning that we lately saw, on the banks of the Clyde, the stubbles of a large farm, gone over with this very implement, and the work done in a most satisfactory manner. The growth of weeds, induced by an unusually wet season was in this case immense, but as it was a rare thing with him to have such dirty stubbles, the occupier did not consider himself justified in getting an expensive implement for work that was merely exceptional, and hence the ploughs were improvised for the occasion. The ordinary two-horse grubber can be converted into a very efficient implement for this purpose by widening the shares, so that they may cleave the surface the full breadth to which they can be set. Light land without stones, or at least moderately free from them, suits this implement best, as being near the surface it is almost impossible to make good work if the land is stony from the frequency of its being thrown out. On all farms where there are four horses sufficiently strong to work an improved cultivator, which combines the broadshare and grubber, that implement ought never to be wanting. It is the most short-sighted policy imaginable to grudge the first cost of this most invaluable auxiliary for working and preparing all land intended for green crops. The cost of even the largest-sized one is saved and much more than saved the very first season, and the work is done in a style that could not possibly be attained by the action of plough and harrows, unless under the most favourable circumstances and by repeatedly going over it. There are many forms of this valuable implement sent out by the leading English firms, but in their leading features they more or less resemble each other, and it must be admitted they for the most part do the work in first-class style. The leading point of resemblance is the use of chilled shares, a most admirable invention, as the amount of wear given when hardened by this process is extraordinary. In raising or lowering the depth, and throwing in and out of gear, some of them possess decided advantages over the others, but in doing the work there is really not much difference. Although there are cultivators of more pretensions than Clay's, we have found it a very excellent one, and every successive season like it better and better. It is a machine that for strength, cheapness, and simplicity recommends itself very much to farmers of moderate extent, as the first cost is light, and the expense of keeping it up afterwards is next to nothing. Whatever implement the farmer may decide upon using it will be of but little use to him unless well horsed. It is folly to put weak or badly-fed horses to a cultivator, such animals would not stand that sort of work one hour; the horses used must be stout and well-fed, and able to keep the machine going steadily through the soil without jerking or plunging. However strong they may be it is much better to keep four always to it, as then they are in a measure above their work, and can pull it through at a good rattling pace, which has the effect of not only stirring the soil in a more efficient manner, but throws the weeds much better to the surface. The introduction of these implements into this country in the combined form of broadshare and grubber, has been attended by the most beneficial and important results to agriculture, and much praise is assuredly due to those gentlemen who have devoted their time and mechanical genius to bringing out and perfecting these valuable agricultural implements. No one conversant with them would grudge their inventors a rich pecuniary reward. The great advantage possessed by a first-class cultivator over every other implement is, that when once set to the requisite depth, being in no way dependent upon the assistance of the man in charge, it preserves a uniformity of action highly conducive to the kindly working of the horses, and eminently suitable for the proper cultivation of the soil. In setting, preparatory to beginning work, the character of the soil must be taken into consideration, and the depth at which the implement is to penetrate varied accordingly. If the soil is stony the depth must be such as to give a firm hold of the ground, otherwise it will be frequently thrown out, the ground missed, the horses made restive and unsteady, and the object of the agriculturist to a great extent defeated. It may be asked why attempt to work such land at all with any other implement but the plough? At first sight it would seem as if the mere breakage of the shares would entail so much expense as to counterbalance any benefit derived from the operation; such however is not the case, as when the shares are of the right stuff and hardened by the peculiar process technically termed "chilling," it is most extraordinary the amount of rough usage and knocking about they will stand. When the stubbles are very foul the depth in this case also must be considerable, as the implement will not hold the ground unless entirely under the roots of the weeds. From four to six inches is about the most useful depth, as the weeds are not only effectually thrown out, but the soil is stirred nearly the depth of the plough. When the first operation is crossed, which it must be to have the full advantage of atmospheric influence, the tines of the cultivator may be let into the ground as low as the depth of surface will permit, the soil having been previously softened, the horses are not overpowered by the second operation, and will pull it to any reasonable depth. A few strokes of a heavy harrow with the teeth well sharpened will now complete the eradication of the weeds from the soil; and at this point let us notice the great and essential points of difference between the plough as a cleaner of land and the improved scarifier or broadshare as now perfected by a few of the leading agricultural implement makers, and by them diffused not only over these kingdoms, but every country in the world where agriculture takes a prominent place. Whilst the plough merely turns over or inverts the soil, dividing the roots of the weeds and distributing them more evenly, entailing enormously increased labour in the spring, the cultivator gets under the root and without cutting or breaking the smallest tendril throws the plant completely out, and leaves it on the surface. Herein lies the secret of the success of the broadshare, as when the work is once done it is well done, and instead of entailing extra labour for the future, lessens the spring-work by at least three-fourths of what it would have been if in autumn the stubbles had merely been inverted by the turn-over plough. When the weeds are once out on the surface they can be forked together and carted away to the compost heap. This, however, unless the ground is very full of roots of couch, coltsfoot, or dock is not absolutely necessary, as if the weeds are thoroughly shaken out and disintegrated by the action of the harrow, they will never again catch hold of the soil after having been buried by the plough. By taking a little extra trouble in shaking them out and submitting them to the sun's influence a great deal of time and trouble is not only saved, but a considerable amount of manurial assistance in the form of vegetable mould is given to the soil. Some men have got so fond of the cultivator, and estimate its efficiency so highly that they discard the plough altogether when preparing the land for green crops, using the cultivator exclusively. On some varieties of soil it is just possible that the work may be done without the assistance of the plough, but in general the two implements combined make by far the best work. In autumn, after a double stroke of the cultivator, and when the land has rested say a fortnight to allow of the germination of the seeds of annual weeds, the plough can be used with great propriety in turning the field down with as deep a furrow as three horses can draw, if the nature of the soil will permit it. Any part of the field missed by the grubber is caught by the plough, and the whole is left in splendid condition until the spring comes round. During the rains of winter the soil when thus treated never becomes sodden or runs together, but remains dry and friable, whatever should be the character of the weather. How favourably such land contrasts with that merely turned over probably, as is frequently the case in November and December, while the land is soaked like a sponge with water, the impression of the horses' feet being full of water for weeks together. When the months of April and May come round, and the land has to be prepared for green crop the difference is more apparent still, and forces itself more prominently into notice. The farmer who worked his land in autumn has nothing to do but harrow, plough, harrow, and roll—four operations, and his field is fit to drill. His mind is easy, as his work being so forward he is independent of the weather, at least as far as human foresight can make him, and that is sufficient. He need not have his horses and men out in bad weather doing more harm than good; nor need he go on the land after rain until it is really in a fit state to be worked, he can afford to wait. He is in good spirits, and his men are equally so, for the work is pleasant; things going smoothly and prosperously being a capital aid to raise a man's spirits and equalise his temper. Where autumn cleaning and cultivation has been omitted the case is widely different when spring comes round: the land must be ploughed, harrowed, and rolled, not only once, but very likely four or five times over; if the soil is clay a clod-crusher will very probably have to be called into requisition, besides the services of a number of women and children to pick off the roots of weeds set free by each successive operation of the plough and harrow. The horses must be highly fed to stand the push, and so much having to be done, the work is often persevered in; when the land is not in a fit state for working, and the consequence is, that portions of the field run together, and the small seeds never take well, but maintain only a languishing existence during the entire season. Allowing that the weather is favourable, there is so much to be done in a short space of time that the season gets too far advanced before all is finished, and the crop is consequently endangered. The very working of the land so frequently under a burning sun and drying wind exhausts the moisture and renders the chance of a healthy and even braird extremely remote indeed. When so much depends upon the start, this one little fact of the autumn-worked land retaining the moisture, and thereby enabling the small seeds to braird evenly, quickly and strongly, speaks volumes in favour of the system.

Barley, which is now so frequently sown after wheat can be got in, in splendid order with but little trouble, when the wheat stubbles have been gone over with the cultivator in autumn. A double harrowing will frequently do, or at most a stroke of the grubber, when it will be fit either to drill, or put down under the small seed plough, a mode of sowing barley coming rapidly into repute, and which seems to suit the crop exceedingly well. The soil being so fresh every seed will germinate; and when the grasses and clovers are sown at the same time, they never fail of making a good hit, and establishing themselves in a manner eminently satisfactory to their grower. When vetches are sown in the month of September, to come in as a spring food, the crop is vastly improved by giving the soil a preparatory tearing with the grubber. So much are they improved by this process that a better crop will be grown with twenty-five loads of dung to the acre than with fifty when the soil is merely reversed. The soil is so thoroughly pulverized by the action of the grubber that the rootlets, the moment they are evolved, are able to take up nourishment for the support of the plant, and in a very few weeks completely fill the soil with a network of roots. To show how extremely suitable this minute pulverization is for the nourishment and sustaining of vegetable life, we may mention a fact connected with autumn cultivation, which however, is not a very gratifying one either to the eye or mind of the careful and economical farmer when it comes under his notice. Unless the greatest possible amount of care has been exercised in cutting and saving the corn, the farmer will find, after well stirring the stubble land with the grubber, that there will come up a plentiful growth of corn, so luxuriant, that if he had had it in spring, it would have been his delight, but now when it is a dead loss, is a fruitful scourge of chagrin to him, and he hastens to plough it down, and get it out of sight as speedily as possible. The fact of such a heavy loss by shedding being brought so forcibly and prominently before him even once, is a caution for all time coming, and will act as a powerful incentive to spare neither time, trouble, nor reasonable expense in getting his corn cut before it is dead ripe. A bag of corn lost per acre by shedding would, had it been saved, have amply paid all the expenses of harvesting, and even half that amount saved by a little extra attention, ought to be sufficient inducement for increased attention on the harvest-field. There is still another economical feature in connection with this subject, that before concluding claims our attention, and that is the saving of horse labour, and horse keep thereby effected. Instead of being allowed to run on the pastures, as is frequently the case, a regular system of autumn cultivation requires their being put to work immediately after the fields are cleared, having a full day of ten hours at that period of the year, a great deal of work is got through before the bad weather sets in. During the dead of winter they need not go on the land at all, carting stones for roads and drains, drawing out manure, thrashing, &c. filling up their time. The work of the farm being by this system always in a forward state, they do not require to be out duriug very wet and inclement weather, thus preserving their health, and lessening the risk of colds and other inflammatory diseases. By the work of the farm being better spread over the year, the horses are more regularly employed, and fewer of them are consequently required. The saving of corn and hay required to feed one pair of horses forms an item of retrenchment very acceptable, and gladly hailed by the majority of farmers. When the land has been autumn-tilled with good implements and powerful well-fed horses, able and willing to go through their work, what a pleasure is afforded to the farmer in spring, when he finds his land turning up dry and friable, cool, and as mellow as meal, and so clean that not a thread of couch is to be seen from end to end of the furrow-slice. Even a tyro at the art could well imagino that whatever was sown on such land would go on and prosper.

J. S.

GROWING PREVALENCE OF TAPE-WORM IN CATTLE.

Two of the four questions stated in a previous paper—viz., How does tapeworm enter lambs? and, How can it be prevented from entering?—remain to be noticed in this.

There is one tapeworm, or rather cystic worm, peculiar to sheep—viz., *Cœnurus cerebralis*, with which shepherds have long been familiar. Dr. Cobbold, one of our best authorities in this branch of science, says (page 119): "Sheep fed with the proglottides of *Tænia cœnurus* get *cœnuri* in their brains, and dogs fed with the latter get the former developed in their intestines." But hydatids in sheep is one disease, and tapeworm another. Dogs are subject to both these diseases. But tapeworm in dogs cannot be the direct cause of tapeworm in sheep. The dog, for example, eats the brain of the sheep or part infested with hydatids, and by so doing gets tapeworm; but lambs do not eat the brains and entrails of dogs, much less their own brains and entrails, and hence must eat the cystic worm of the peculiar or corresponding tapeworm with which they are infested. Whatever may be the peculiar species of tapeworm now infesting lambs, it has its own corresponding cysticercal larva, which, according to the data quoted in No. I. from Dr. Copland's "Dictionary of Practical Medicine," must have previously infested some other animal. "Kurchenmeister asserts that all eminent German zoologists now agree with him in believing that all cystode worms, and not merely the *tæniæ*, pass through a cysticercal state; that the cysticercal larva lives in various parenchymatous organs, and the few *stolex* (*strobila*) usually in the intestine of a different host; and, lastly, that the tapeworm head (*scolex*) is produced in the interior of the previous embryonic body (*i. e.*, the caudal vesicle), and remains enveloped by this until it gains the situation for which it is ultimately destined." This, applied to the question at issue, may be read thus. The *scolex* remains enveloped in its cyst until it gains the intestine of the lamb—this being the situation ultimately gained, where the joints grow from the liberated and free tapeworm head (*scolex*) by the budding process.

The answer to the question, it will thus be seen, involves the third stage of tapeworm life—*i. e.*, the passage of the tapeworm head or *scolex* into the intestine of the lamb along with the food or herbage it consumes. In some species of tapeworm the probability is that it passes in the cyst in which it has been enveloped in some other animal. Other species of tapeworm heads, however, as those of *Tænia cœnurus* and *Tænia echinococcus* may enter in a somewhat different form, as a single hydatid contains an immense number of them; hence the propriety and even the necessity of tracing the parasite through all its various stages of life, in order to arrive at trustworthy conclusions.

A single measle of a pig (*Cysticercus cellulosæ*) or cysticercal larva of the common tapeworm (*Tænia solium*) would only produce one tapeworm in the person or animal that eats it; but the hydatid of a sheep (*cœnurus cerebralis*) would produce a large number of tapeworms in the animal by which it was eaten, assuming that the animal is a suitable host. We are not aware of the tapeworm head of the former being separated from the enveloping cyst, and in a free state, so as to pass out of the measly pig or measly pork, becoming attached to grass or any other herbage, and thus be eaten by graminivorous animals; but the tapeworm heads of the hydatids are frequently set free, and scattered abroad in various ways, so that they may enter sheep and other kinds of cattle, as also hares and rabbits, in which both the hydatid and tapeworm abounds either in their food or drink.

The common practice of breaking the watery vesicle or bladder in the head of a sheep by putting a wire up the nostril, is an instance of setting free hundreds of the scolices of *Tænia cœnurus* as they pass off in the water, and hence may enter the stomach and intestine directly from the nostril; or the water containing the scolices may fall upon the grass or pools where they drink, when they would thus enter the lamb, producing tapeworms. Dogs are more likely to get tapeworm from the hydatids of hares, rabbits, and other wild animals of this sort, which they frequently catch or find and devour them from those of sheep, just as cats get *Tænia crassicollis* by eating mice infested with *Cysticercus fascicularis*. Again, the hydatids of hares and rabbits may be eaten by many animals, which do not prove suitable hosts for the rearing and development of tapeworm; hence the tapeworm heads or free scolices may pass through such animals as foxes, weasels, hawks, carrion crows, ravens, &c., uninjured, and thus be sown broadcast over sheep walks. In our present state of knowledge it were difficult to form an approximate estimate of the mischief done by hares and rabbits in this respect, as also by partridges, pheasants, and other winged game terribly infested with cystic worms and tapeworms. Moreover, a great many *cænuri* must necessarily pass through those animals (as the dog, &c.) which devour hares and rabbits infested with them uninjured, and thus be spread over the pastures; for it is impossible that the whole number thus eaten can be developed into tapeworms, as the capacity of the intestines of such animals is too small to hold them, although in other respects such animals may be suitable and even inviting hosts for rearing tapeworms from cystic worms.

What has just been said of the hydatid of *Tænia cænurus* in the brain and other parts of sheep, hares, rabbits, &c., applies to the hydatids of *Echinococcus Tænia*, and of some other kinds of hydatids, each of which contains an immense number of tapeworm-heads, which may be liberated and set free by the breaking or bursting of the watery vesicle, and the escape of the water with the living brood which it contains. These tapeworm-heads are so small that they may be suspended in water in myriads where the sheep drink, or become agglutinated to the blades of grass in dozens, without being perceived in either case by the naked eye of the shepherd; and in this manner they may enter his lambs, and take up their residence in their intestines more readily when sickly, from the bowels being deranged, as is frequently the case, both when lambs first begin to eat grass, and also when they are being weaned, and begin to drink water, than when they are robust and healthy, although the hydatids, when in this state, may either be destroyed by the digestive organs of old healthy sheep, or pass through their bodies harmless and unharmed.

These tapeworm-heads, when liberated from the hydatid, instead of being agglutinated to the leaves of the herbage eaten by the lambs, or be present in the water they drink, may, in the first place, be devoured by insects, in which they may remain for a time; or they may adhere to their surfaces as the insects pass over them. In this manner, they may pass from one place to another, eventually becoming attached to the grass at the death of such insects, when they may afterwards find their way into the intestines of the lamb, just as the shrew-mouse is said to get a species of tapeworm by eating snails infested with cystic worms.

There are thus several ways, any one of which the parasite may take, as the circumstances of the case may determine, in travelling from its cysticercal to its tapeworm state. Much discovery may yet be needed before the various routes of the different species of tapeworms of the same kind as *T. cænurus T. Tekinococcus* can be accurately laid down upon paper, so as to be easily traced through all its windings with the finger of the shepherd. But to us part of the way, at least, is clearly seen, viz., the course which hares and rabbits and winged game occupy in rearing hydatids from embryos, and spreading over the pastures their tapeworm-head brood. Between this and the intestines of lambs and other cattle there may, no doubt, be a narrow gulph not yet bridged over by the microscope and scalpel of the anatomist; but, nevertheless, the general line of progression beyond is clearly seen in the distance; so that when this narrow stream is once bridged over, thereby enabling farmers to pass dry-shod, it is manifest that the game nuisance, now so much complained of, will be acknowledged by all parties interested a curse to the country, in a much more extended sense than is now credited by many, and that the extermination of all wild animals will ultimately become the universal rule.

Returning to the common tapeworm and others of the same kind, in which only one tapeworm-head is enveloped in one cyst, two examples will serve for illustration, viz., the common tapeworm *(T. solium)*, whose hooked embryos, when eaten by pigs, produce measles *(cysticerious cellulosæ)* in pork; and the black-headed hookless tapeworm *(T. mediocanellata)*, whose hookless embryos, when eaten by black cattle, produce the corresponding cysticerci, common in beef—much more common than is generally imagined. Speaking of those two parasites, Dr. Cobbold says (page 243): "The hooked worm infests the poor—the hookless worm, the rich. This circumstance accords with the fact that the lower classes subsist chiefly upon pork, while the wealthier prefer mutton, veal, and roast beef." But lambs neither eat pork, mutton, veal, nor beef: hence they must eat the cysticercal larvæ presented to them in some other form, assuming that either of those tapeworms, or some other tapeworm of the same sort, is that with which they are now infested.

Dr. Cobbold says that "Leukart tried to infest sheep with the cysticercus of *T. mediocanellata*, but failed." The experiment, however, is, in our opinion, of too limited a character to settle the question fairly on a thoroughly established scientific basis. In the various flocks now suffering from tapeworm, for example, there are hundreds of sheep not infested which, in all probability, eat as many cystic worms in their food as the lambs do that are infested. The fact is a very important one when examined in a prophylactic light, as we shall see under our next question—the preservation of lambs from tapeworm—inasmuch as it proves that tapeworm is as sensitive about the quality of its food and habitation as other parasites are, and that an abnormal condition of the bowels is necessary to fit them for becoming a suitable host for rearing tapeworm. Dr. Copland says, "Cysticerci, when transferred to the intestines of other animals, do not become developed into jointed tapeworms, unless the species of cysticercus is suited to the intestines of the particular animal. Thus the *cysticercus fusiformis* was not developed in the intestines of the cat, but it was fully developed in those of the dog." In one sense, this experiment may be said to fortify that of Leukart; but when we come to the question of chemical difference between the digestive functions and intestines of the cat and dog and that of those of the sickly lamb and healthy old sheep, the objection to Leukart's experiments remains unanswered; so that further experiments require to be made before it can fairly be affirmed that the hookless cysticerci of *T. mediocanellata* can lay hold on the intestine of man, but not on the intestine of a sickly lamb.

There are several ways by which parasites of the kind in question may travel from their cysticercal to their tape-worm state. Thus, although a great many cysticerci may lodge in the intestines of carnivora, yet vast numbers liberated from the flesh and parenchymatous tissue in which they had been bred from embryos must pass through such animals, be spread over the pastures, become agglutinated in the herbage eaten by the cattle, and thus enter their systems. In other cases the cysticerci may be bred in the bodies of insects, from embryos which the latter had eaten. Or the embryos may have attached themselves in such insects, and after boring their way into them may have become encysted in the interior, the insects at the same time becoming affixed to the leaves, stems, and fruit of plants, and in this manner the cysticerci may make their passage into cattle. Or there may be certain peculiar parts of plants or kinds of plants whose fleshy or granular texture is found to be a suitable host for the rearing of cysticerci from embryos, so that by feeding on such infested vegetable matter, the cysticerci may find their way into the intestines of cattle, birds, &c.

The fact that granivorous birds are as greatly infested with tape-worm as carnivorous birds accords with the above hypothesis of cysticerci entering cattle, from the latter eating the insects or vegetable matter on which they are bred, or in which they reside, or to which they are fixed. True, many of these birds, as the partridge, grouse, and pheasant are partial to the larvæ of insects, and therefore they may pick the encysted parasites out of the carcases of hares and rabbits, along with maggots as they rot on the hill-side, or in the corn or hay-field, or game-preserves, where hares, rabbits, and the like are not unfrequently thrown down purposely to breed maggots for game. Such a course, it will readily be granted, is quite sufficient to account for the rearing the tape-worm in most birds of this class under certain circumstances, but not under all, and therefore we think that the bodies of insects in our pastures should be more closely examined for cysticerci than they have hitherto been, more especially those that are found agglutinated to leaves, stalks, and seeds, together with others that enter the stomach in a sickly state along with the herbage to which they cling. It is not often that shepherds examine closely the contents of the stomach of their sheep, but those who have done so with any care must be familiar with the presence of much insectivorous life, while the few who have tried their skill at a microscopical analysis have been not a little puzzled to account for the hodge-podge revelation of animal and vegetable life at certain seasons, when the pastures are swarming with insects, and the atmosphere literally at times clouded with them in various stages of life.

Some have supposed that these parasites are at the proper stage of life encysted in the interior of the first stomach of ruminants by being fixed in its inner coat similar to bots in horses, that the cysticerci break loose from this and pass to the intestine. With the cœnuri and others bred in large numbers in watery vesicles or bladders, there is some faint probability in favour of the hypothesis, but there is much that is scientifically opposed to it, while experiment is wholly wanting to give it even a passing currency amongst practical men conversant with the subject.

We now come to the question of preventing tape-worm in lambs, or rather to discuss in a single paragraph the dietetic means for preventing cysticerci from lodging in the intestines of lambs and breeding tape-worm. The reason why *Cysticercus pisiformis* cannot be developed into *Tænia serrata* in the intestine of the cat, is a chemical one arising from the presence of matter possessing chemical differences in the *primæ viæ* of the cat from that in the *primæ viæ* of the dog, and not from any partiality which the cestode has in the canine race. Exactly the same thing is true of lambs infested from sheep not infested. Now, all such differences manifestly resolve themselves into questions of dietetic and alimentary economy. Just now when cholera is becoming prevalent and spreading far and wide how anxious is the medical world to guard against predisposing causes. Exactly so is it in the prevalence of all kinds of worm diseases—there must be a predisposing cause, an abnormal state of the bowels, or chemically speaking there are two forces involved: an attractive force, and a repulsive force. In our modern system of stock management farmers deal too much in the former and too little in the latter relation in what forms a suitable host for worms. They must, therefore, for the future have more of the element that is repulsive to the natural wants of the peculiar cysticerci now being developed into tape-worms in our cattle, lambs for example, and we aver, terebinthinate food, for which sheep are naturally partial, and which is poison in most parasites of this class, would prove a prophylactic remedy. Grind fir-bark and leaves, juniper, &c. into meal along with some other tonic barks, and mix this with the food of both ewes and lambs, and so on.

AN OLD SHEPHERD.

THE REMOVAL OF CATTLE.

IMPORTANT TO CATTLE DEALERS.

The Tunbridge magistrates have again had to dispose of another batch of cases for alleged infringements of the Orders in Council relating to the sale and removal of cattle; this time, however, not quite such a formidable one as that on the last occasion. The extent to which licences are available for the removal of cattle from one part of the country to another, and the jurisdiction of justices over persons holding such licences, seemed to be the points raised; and Mr. Cripps, the solicitor, who appeared for the defence, was able to quote in behalf of his clients a decision from the "New Law Reports," given in a case by Chief Justice Erle, which left the bench very little to do except to dismiss the informations. The defendants were named respectively Mr. George Acott, of Yalding; Mr. Wm. Owen, John Norton, of Wateringbury; and Mr. Moncton, of Yalding; and they were severally charged to the effect that they unlawfully caused to be removed a number of cattle at Brenchley, on the 4th instant, contrary to the Orders in Council relating thereto. Mr. Cripps suggested that Moncton's case should decide the others, as the facts were similar; and no objection being made by Superintendent Dance, this suggestion was acted upon. Before the bench proceeded with the case, however, he asked that the information might be amended. They were charged with removing cattle without a proper licence. This was indefinite, and he apprehended that seeing that Moncton had a licence it was perfectly beside the question for the bench to think of inquiring whether there was anything wrong in that licence. Superintendent Dance remarked that he was quite willing to admit that the defendant Moncton had a licence, and this licence in the other informations was put down as illegal. The evidence of Police-constable Tucker was then taken. He stated that he had seen Mr. Moncton at Paddock Wood Railway Station on the morning of the 4th instant, and heard from him that he was expecting by rail a number of cattle. Subsequently he saw the cattle arrive, and a servant of the defendant looking after them. On asking him what he intended doing with them, the man at first said he was going to remove them to Yalding, but afterwards supplemented this statement by saying he had to take them to Horsmonden. Witness asked to see the licence for the removal of the cattle to Horsmonden, but found, on examining it, that it was granted for the removal of fifty heifers from Bristol by Great Western Railway to Reading, thence by South-Eastern to Paddock Railway Station, and by highway to Staplehurst. As nothing was mentioned about Horsmonden, witness told the man he could not remove the cattle to that place, and advised him to put the cattle into a field, whilst he would make Mr. Moncton acquainted with the fact. Having also explained the matter to the defendant Norton, witness left the other constable in charge, and proceeded to Tunbridge. Mr. Moncton subsequently procured a licence from Mr. A. Beeching, and the cattle were removed the same day.—Mr. Cripps, on Superintendent Dance proposing to give an explanation as to the licences, mentioned that it had been decided that whenever a licence had been granted by the proper authorities, the magistrates had no jurisdiction to inquire into anything behind it; and that, therefore, the bench had nothing to do with the circumstances under which the licence had been granted to the defendant. Superintendent Dance said it was illegal for the defendant to remove cattle unless the same had been in his possession twenty-eight days. Mr. Cripps then quoted the case in which the decision to which he had called attention had been given. The case in question was that of "Stanhope *v.* Thorsby," and arose under the 11th and 12th Vic., cap, 107, and related to licences for the removal of cattle, and the jurisdiction of magistrates. The opinion of Chief Justice Erle in this case was as follows: "I am of opinion that the conviction in this case was wrong. The power to convict is given to the justices if cattle are removed without a licence. Here the cattle were removed under the authority of a licence from a magistrate. The conviction, therefore, in point of law is wrong. The appellant had applied to Mr. Elmhurst for a licence, and the justices find that there was no intentional deception. They considered that they were entitled to go as it is called behind the licence and to inquire into the quantity of evidence upon which the magistrates who granted it acted. I think they had no power to do so. Mr. Stanhope acted without any intention to do wrong; and I must say that the magistrates who convicted him have acted with the intention resolutely to do their duty in a public matter of the highest importance; but I am obliged to come to the conclusion that they had no right to inquire into the sufficiency of the information upon which Mr. Elmhurst acted." In claiming the same advantage for his client he mentioned that he could produce both the licence from Bristol to Staplehurst and also the one granted by Mr. Beeching; and as decided by Chief Justice Erle, this would preclude the bench from having any jurisdiction in this case. After a few desultory observations the bench dismissed the cases against the three defendants.

FARMING IN ESSEX.

The Braxted Farmers held their Labourers' Meeting on the 4th October, when Mr. Du Cane said:—"Next to that fearful visitation, the Rinderpest, I think the most remarkable feature of the past year has been the gradually-failing supply of agricultural labour. No doubt the numerical falling-off of agricultural labour may be a very good thing to those labourers who remain, as it will inevitably insure to them higher wages and the certainty of employment at all times and seasons. But, on the other hand, if the supply of agricultural labour should continue to diminish in the present proportion, the farmers of the kingdom must lay their heads together to meet in some other way that deficiency; and I think that during the next few years we shall witness a larger development of inventive power as regards new machinery, and a more thorough development and perfection of the machinery we already have in practical use. I think, too, we shall witness a much greater development of the powers of steam as applied to the cultivation of the soil—(Hear, hear, from Mr. Mechi)—and I think, although it may sound rather chimerical to some of us, yet when we have lately seen England and America, thousands of miles apart, united by a single wire, we cannot question the possibility of seeing parishes and districts combining together, and companies being formed, to obtain and afford the command of that machinery which the small farmer would be unable to avail himself of by purchase. And if this be the case I really begin to think it essential to be still more earnest in our efforts as landlords, farmers, and employers of labour, to develope the skill and improve the moral habits of our labourers, in order to enable them to deal with such machinery, not only skilfully as regards its use, but with safety to those employed about them. I wish I could congratulate those amongst you who are farmers upon the general prosperity of the agricultural interest; but I am afraid, although perhaps in this particular locality we may consider ourselves fortunate when we compare ourselves with other parts of England, I am afraid throughout the greater part of the kingdom there must be a severe amount of agricultural pressure, suffering, and distress during the ensuing winter. But I am aware that this is a very ticklish matter to talk about. A fine old agriculturist sitting near me, Mr. Wm. Fairhead, when I told him just now that I should probably propose the toast of success to Agriculture, and couple his name with it, said to me "For God's sake don't do anything of the kind. Doctors do so differ in opinion now, one-half of mankind thinks differently from the other half; and anyone who cannot agree with the views of another, will turn away and say 'The man's a fool.'" Those are my friend's exact words.—(Mr. Mechi: And very true too.) I said just now that I thought we had passed through a very remarkable agricultural year; and besides the leading features which I have already pointed out, another I would mention is this—that one cannot find any two men who hold the same language with regard to the character of our agricultural prospects at the present time. The other day, at Halstead, I ventured upon what I thought a perfectly safe remark that our agricultural times were just a little out of joint. But immediately there rose up a great agricultural authority who said that in his opinion agricultural times were peculiarly in joint; and his speech was hardly finished when another speaker rose and declared that we were both wrong, and that in truth there was no joint about the times whatever. I always peruse with great interest what is said at agricultural meetings at which I don't happen to be present. At Dunmow, a few days ago, several speakers got up one after another and lamented over agricultural prospects, more particularly the wet harvest. But a gentleman got up afterwards whom I should like to have very much for a tenant, who said people were very fond of grumbling on these matters, but for his part he rather liked a wet harvest, because but for that he should not be getting such an excellent price for his barley. I suppose my friend thought that a wet harvest—like a shower bath to some people—acted as a wholesome tonic; but the moral I would draw from all these differences of opinion is this—that however gloomy may just now be the future of agricultural prosperity, yet after all there is a gleam of sunshine, and a bit of blue sky appearing through the gloom.

Mr. Mechi said no doubt they expected that on an occasion of this kind he should say something of agriculture. He was often surprised, and as often regretted, that at many agricultural meetings of the kingdom, agriculture seemed to be almost forgotten in the complimentary speeches to different individuals, forgetting to bring to bear the real question of the progress and condition of British agriculture. Having expressed his high approval of these Societies, and having congratulated Mr. Du Cane upon establishing this, which might be regarded as a resuscitation of that which formerly existed at Witham, he observed all agricultural meetings of this kind, having for their object the improvement of the general condition of the labourer would be successful, provided they discarded from them political animosity and personal invective, for that had been the ruin of many societies. Referring to the present condition of British agriculture, he thought it somewhat anomalous that we had a population of nearly 33 millions of people, and that they were unable to produce sufficient food with which to feed themselves—although for neither want of food nor capital. Having alluded to the large imports every day into our country simply in grain, poultry, and eggs, he asked, was it right, that with an abundance of land we should be in this position? The acreage of the United Kingdom was 77 millions, 61 of which was available for the production of food for man and beast; and an increase in the matter of production of 1s. per acre would, he pointed out, represent 30 millions sterling. Surely they could improve production to that extent, and how was it to be done? (A voice: "That is what we want to know.") The first way to do that, he believed, would be to eradicate a number of the old prejudices; and, secondly, to increase the education, not only of the labourer, but also of the agriculturist himself; and, in the third place, landlords should be taught, if they did not know it, that their interest was concurrent with that of the farmer, and that if we were to produce more food it must be by the introduction of more capital, more intelligence, and more liberality, both on the part of landlord and tenant. In speaking thus he referred to no one particular parish, but to the great map of England. Having counselled landlords and tenants each to give way in some of their prejudices, he contended that England was wofully deficient in investing in stock, and he referred to this as one of the principal reasons why our produce was not greater than it was. Alluding to the question of landlord and tenant, he said we could not inculcate too liberal and business-like views in agriculture, otherwise what would take place? He took himself as an instance. He had lately parted with the lease of a house in the City, upon which he had laid out a great deal of money, and had sold that lease for £5,200. But, supposing that his landlord had not granted him a lease for the property, and supposing that he had not had the power to transfer the lease, his family would have been deprived of the sum of £5,000. He esteemed and respected landlords, and he knew that they were devoted to the welfare of this country; but there could be no doubt they would have to give up some of their false prejudices and treat agriculture in a business view. Passing on to another subject he remarked that he saw many gentlemen present who did not believe in draining stiff clays. He himself did, and he spoke from the experience derived from his own land, which he could hardly believe, from its facility of tillage, was the same as when he went to it 22 years ago. He attributed this to its drainage, and afterwards deep cultivation; and he regretted that there still remained a conviction that there was no use draining stiff clays, because water would not go through them. The absurdity of that argument was, however, shown in the erection of farm houses. He knew of one case where the builder erected a house on a stiff clay, and forgot to drain the land 4 or 5 feet. The consequence was that heat contracted, while wet expanded, the foundation, and threw the house out of form. Alluding to the question of the improvement and increase of machinery, he said it was now twenty years since he put up his first steam engine, and at that time he was very much laughed at; but since then he was glad to say some of his practical friends had altered their opinion, for with the attractions of better wages, labour was departing from the agriculturist and going to the manufacturing districts. This, it was evident, would cause a great demand for machinery, and this was the real history of the cleverness of the Americans in this respect. The fact was that human labour was there so high, that they availed themselves of every opportunity to avoid it. There could be no excuse for our not doing the same here—coal was cheap and iron was cheap, and he should recommend his friends at once to adopt it, and above all to keep plenty of stock, for they must recollect that the man who kept twice as much stock made twice as much manure, and would consequently have double the crop. In conclusion he would only say that he was very glad to see a little *blue* sky, but he hoped, too, that their crops next year would be *yellow* with a lovely sunshine, and that they might be abundant.

Mr. Hall, as a practical farmer of many years' standing, differed with Mr. Mechi as to to the drainage of stiff tenacious loams. He had himself drained from two to four feet, but the fact was that these loams held a certain quantity of water, and would hold no more, and even with this wet summer he would defy Mr. Mechi to have told the difference between the drained and undrained parts.

The Rev. C. B. Leigh said: With regard to the question of drainage, he reminded Mr. Mechi that drainage had been introduced into Essex years before that gentleman came into the county. While he agreed with much that Mr. Mechi had said as to the drainage of stiff clays, he said he could have shown him this year crops not inferior to those grown at Tiptree Hall upon land drained on the old sytsem—30 inches deep and a rod apart.—(Mr. Mechi: You are quite right.) This showed that one uniform depth of drainage was not practical throughout the whole county.

Mr. Mechi remarked that he had always held up Essex and Suffolk as the earliest drainers in the kingdom, but he and the Chairman were talking of two different soils. The class of soil to which he was alluding was the collapsing stiff loam with no chalk in it. When he came into Essex nobody believed that these collapsing soils could be drained, because, under the old system, the faggots and straw were immediately swallowed up; but the introduction of pipes, which could not be shut up, altered the question altogether.

Mr. Hall differed with Mr. Mechi as to the utility of pipes; he believed stones to be decidedly superior, and that they would last longer.

Mr. Du Cane came to the conclusion that no one average depth would do throughout the county. Some time since he had drained Mr. Carter's farm under the Government loan principle—four feet deep, and he was pleased to hear that his tenant was satisfied with it; but another tenant, Mr. Gooday, to whose farm he offered to do the same thing, told him plainly that if he were to offer to do it entirely at his (Mr. Du Cane's) expense he would not thank him for it.

THE BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

A monthly meeting of the Council of this Society was held at Douch's Railway Hotel, Taunton, on Tuesday, Sept. 25. In the absence of the president, John Tremayne, Esq., the chair was taken by Mr. Acland, M.P.

Officers for 1866-7.—The following list of officers for the ensuing year was brought up and confirmed—Publication Committee: Mr. Acland, M.P. (chairman), Lord Portman, Mr. J. H. Cotterell, and Mr. G. S. Poole; editor, Mr. Josiah Goodwin. Finance Committee: Mr. Clement Bush (chairman), Messrs. T. Hussey, G. S. Poole, and H. Williams. Stock Prize-sheet Committee: Messrs. C. Gordon (chairman), T. Danger, J. T. Davy, T. Duckham, M. Farrant, H. Fookes, J. Fry, John Gray, J. Hole, T. Hussey, J. W. King, J. E. Knollys, G. Langdon, J. Lush, H. A. F. Luttrell, T. Pain, J. P. Pitts, Jas. Rawlence, and E. U. Vidal. Implement Regulations Committee: Messrs. J. E. Knollys (chairman), T. Duckham, M. Farrant, John Gray, Jonathan Gray, H. P. Jones, S. Pitman, and Jas. Rawlence. Contracts Committee: Messrs. John Gray, Jonathan Gray, G. S. Poole, and J. W. Sillifant. Judges' Selection Committee: Messrs. H. G. Moysey (chairman), R. Brent, M.D., R. H. Bush, H. Fookes, John Gray, C. Gordon, J. D. Hancock, T. Hussey, H. P. Jones, H. A. F. Luttrell, T. Pain, J. P. Pitts, and W. Wippell. Railway Arrangements Committee: Mr. Jonathan Gray (chairman), Sir M. Lopes, Bart., M.P., Mr. Bruce, Mr. S. Pitman, and Mr. T. Pain. Arts Department: Mr. E. S. Drewe (chairman), Mr. Acland, M.P. (vice-president); Committee—The Rt. Hon. Sir S. H. Northcote, Bart., M.P., Sir J. T. B. Duckworth, Bart., Mr. Walrond, M.P., Rev. T. Phillpotts, Messrs. R. Brent, M.D., J. Daw, R. R. M. Daw, Jonathan Gray, W. R. Hicks, R. Lang, S. Pitman, G. Pycroft, W. R. Scott, Ph. D., J. Sillifant, J. W. Sillifant, and H. Williams; Stewards of No. 1 Section, Messrs. W. R. Hicks and W. R. Scott, Ph. D.; Stewards of No. 2 Section, Messrs. John Daw and S. Pitman; Honorary Secretary, Mr. R. R. M. Daw. Disqualifying Committee: The stewards of stock, the steward-elect of stock, the stewards of horses, and Mr. John Gray. Stewards of Implements (Yard): Mr. John Gray and Mr. Froude; Field Stewards, Messrs. J. E. Knollys and H. P. Jones. Stewards of Stock: Messrs. J. Fry, M. Farrant, H. Fookes, and J. Hole (elect). Stewards of Horses: Messrs. C. Gordon, and H. A. F. Luttrell. Stewards of Poultry: Messrs. R. Brent, M.D., and R. H. Bush. Stewards of Horticulture and Music: Mr. Jonathan Gray and Rev. T. Phillpotts. Steward of Advertisements, Mr. C. Bush. Stewards of the Library: Messrs. J. H. Cotterell, Jonathan Gray, and Wm. Thompson. Stewards of Plant: Messrs. John Gray, Jonathan Gray, J. E. Knollys, H. G. Moysey, and H. Williams; General Arrangements, Messrs. John and Jonathan Gray. Steward of the Mess, Mr. H. St. John Manle (honorary secretary). Treasurers, Messrs. R. Badcock and F. W. Dymond. Accountant, Mr. W. Smith, Bath. Assistant-Secretary (Exeter), Mr. W. Roberts. Official Superintendent, Mr. H. Spackman, Bath. Consulting Chemist, Dr. A. Voelcker, F.C.S, 11, Salisbury-square, London. Veterinary Inspector, Professor Brown, M.R.C.V.S., New Cavendish-street, London, W. Secretary, Mr. Josiah Goodwin, Bath.

The late Mr. Robert Dymond: The Secretary having communicated the death of Mr. Robert Dymond, of Exeter, the Council directed the following letter of condolence to be addressed to his family: "The Council of the Bath and West of England Society beg to express to the family of the late Mr. Robert Dymond their sincere condolence with them on the loss they have sustained, and their sense of the value of the services which, as a Vice-President, Local Treasurer, and Member of the Journal Committee, he has for so many years rendered to the Bath and West of England Society."

Appointment of Local Treasurer (Exeter): On the motion of Mr. John Daw, seconded by Mr. J. C. Moore Stevens, Mr. F. W. Dymond was elected honorary local treasurer in the place of his deceased father.

Salisbury Meeting, 1867: A discussion was originated by Mr. Neville, M.P., in reference to the proposed meeting at Salisbury in 1867; the question in debate being whether the Society was pledged under all circumstances to hold the meeting, and whether the Salisbury Local Committee would be satisfied with the best exhibition attainable under any special circumstances existing at the time of the meeting. The debate was brought to a close by Mr. Neville Grenville, M.P., withdrawing the motion of which he had given notice, and it was unanimously resolved "That the Council, after full deliberation, sees no reason to alter the determination to hold an exhibition at Salisbury in 1867." The various committees, to whom is entrusted the preparation of the Prize Sheets and Regulation Papers, were appointed to meet on Monday, the 29th of Oct., with the understanding that the Stock Prizes, so far as the circumstances of the year will permit, shall be on the same scale as originally arranged for the meeting in June last, and the Secretary was directed to communicate with the Hon. Local Secretary at Salisbury, with a view of obtaining information as to any local prizes the Committee may be disposed to offer. A Deputation, consisting of the Stewards of Plant and the Stewards of Implements, attended by the Official Superintendent and the Secretary, was then appointed to visit Salisbury, in order to make all necessary arrangements with the Local Committee.

LABOUR.

At the last meeting of the Newbury Farmers' Club, Mr. **Alfred Stephens** read the following paper: Gentlemen,—I feel myself placed in rather an awkward position, having to address you immediately after one so well fitted for the post of lecturer. The worthy "Professor" gave us a very learned and instructive discourse. As "experience with instruction is the surest way to perfection," I think we cannot do better than obtain the services of such men, as often as we are able to do so. In the few words that I am about to speak to you, I shall endeavour to bring before your notice the most practical and every-day occurrences. I cannot even hope to give vent to the opinion of every individual present; one might as well expect to be able to swim across the Atlantic ocean unattacked by sharks. In the labours of husbandry we recognise the humble but persevering antagonist of those various elements of international and social disorder, which might seem to have presented man as the one great disturbing agent of an otherwise harmonious creation. From the commencement of agriculture we have the satisfaction of tracing the rise of human industry from its origin and basis, and watching those early struggles with material nature, the germ of triumphs which skill and labour should afterwards accomplish on a wider scale. Applauded and esteemed as agriculture has nominally been from the earliest age, and not undignified by the frequent notice of the statesman, and even the philosopher, there is yet not one amongst the list of human pursuits which may be said to have reached a later period, untouched by the hand of science. If we trace the progress of some of the physical sciences, or follow the course of advancing knowledge in Europe, from a point no farther back than the invention of printing, it is impossible to escape the unfavourable comparison exhibited by that pursuit, whose universal necessity, while affording the strongest excitement to inventive progress, might have been reasonably expected to bring the fullest development of its own resources. It is the well-known distinction of reason, as compared with instinct, that it is progressive in its manifestation and effects, both in species and individuals. The station of the child, beginning from however low a point, each presents the phenomena of intellectual growth, while the brute and the whole brute creation remain stationary. How unaccountable, then, does it seem that husbandry, an art so peculiarly forced upon the energies and intelligence of man by his material wants, and opening up so many avenues of scientific inquiry, should, till of very late years, seem to present an analogy rather with the latter than the former. An unforeseen and growing sympathy discloses itself from day to day amongst the separate departments of human labour and acquirement, more especially in those most nearly connected with natural science, and in proportion to the value and utility of any one pursuit, will generally be found the amount of collateral aid derived by it from other branches of knowledge and discovery, and the extent of the benefit obtained. Chemistry, geology, and animal and vegetable physiology are each directly connected with the labours and the studies of the agriculturist. The advancement of art is mainly promoted by emulation, and correct principles are deduced from comparison; but emulation and comparison are rather alike shut out from the remote labours of the field; where the mere physical intervention of space lessens and stifles the habitual exercise of the perceptive faculties, and therefore deadens the activity of mind. You may be sure that labour will be one of the greatest difficulties that farmers will have to contend with. I do not insinuate solely to the increase of wages, which in course of time will have to be given. A little learning has put on a gloss. Although solid knowledge will make men humble, quiet, peaceable, and obedient to their superiors; yet a smattering of learning, brainsick opinions, and false principles make men deceptive and headstrong. There is a natural strength and force of character, independent altogether of educational advantages, which is likely to be serviceable to a man who is bent on pushing himself through the world, and elbowing himself through the crowd, I will admit. But still, to do anything, employers must have confidence in the employed, and the employed in the employers—nothing gets confidence sooner than punctuality. Pray do not think that I oppose educating the lower classes; on the other hand, I consider education completes what nature has begun; but, nevertheless, I advocate instructing people according to their calling. Classical schools are suited for divines, statesmen, men of business, professional men—and, now, tradesmen must all be up in classics to be able to answer their different customers; but for the agricultural labourers we want agricultural schools; we want schools suited to a country life, in which country employments and art should be taught, for which the children should be prepared by a routine of labour, and their moral character formed by constant industry. Shall I be saying too much when I state that learning has been too much sought after in village schools, and the knowledge of the means by which the children are to earn their bread has been too much neglected? The schools should be planned with a view to country life, and the town schools not too closely imitated; the circumstances are different, and so should the schools be. The schools should form the character. It has been almost entirely overlooked that the character may be formed by labour; moderate labour is the best and surest way of forming character. When men are educated in useful labour, skill, saving, and the knowledge of a trade, they will be honest—they may likewise be independent; but give me a straightforward, candid, and independent man any day to a deceptive, plausible one. Poverty and ignorance are two causes of crime. Moral education is required. There is a difference between instruction and education; you can instruct a person to pick pockets, but you could not educate any one for so heart-rending a calling. Without intelligence we should be worse than brutes. The moral nature of man is more sacred than his intellectual nature. Will is the central force which gives strength and greatness to character. Every farm labourer ought to be able to read, write, and cipher. Gentlemen, there certainly ought to be more encouragement for agricultural labourers. In the first place, I would advocate sufficient cottages on every farm for the regular labourers of that farm, and that those cottages should be of a fair size; a good water supply for each, and a nice garden, at a low rent, which would make the agricultural labourer almost on a par with the manufacturing labourers. Farmers cannot give so high wages in money as mechanics, but the wages are made up in other ways; for instance, letting a house and garden at 1s. per week, where in towns they would have to give three or four times as much for a similar or worse house, without any garden; also giving your men different plots of ground for potatoes extra. Besides, must not we look to health? How much fitter a man is for a day's work when he comes fresh than when he has had to walk three or four miles to his work, or when he has emerged from some damp, miserable, confined dungeon! As soon as you do anything to make a man or woman respect himself or herself, you do something to raise them in the social scale, and a good deal to preserve them from extreme poverty and destitution. I should like to hear your several opinions on the expediency of pensioning agricultural labourers—*i. e.*, for long servitude and good character. The difficulty would be in raising a sum of money for the same. The combination and interest of landlords with their tenants would be indispensable. Labourers on a landlord's estate are in a certain degree analagous to the stock belonging to a tenant. Notwithstanding I have said that I consider there ought to be more encouragements for farm labourers, yet, I believe, that those men who have cottages, &c., as I have previously explained, are in reality better off than manufacturing labourers. I have a man who, with the assistance of his wife during reaping, has earned quite 17s. or 18s. per week—taking summer and winter together—and I will warrant that his cottage, for which he pays 1s. 3d. per week, would fetch 5s. or 6s. per week in London without the garden. He has also other privileges. Again, manufacturing labourers are obliged to do a certain amount of work; farm labourers cannot be kept so strictly to time, and farmers are unable to draw a line as to the wages for the difference of the capabilities of his men, and has to suffer for loss of time in wet weather. An old labourer said to me a short time ago, "Sir, young men are quite different now-a-days to what they were when I was young, although they got more money they were not half so well off—and why? for this reason: if I wanted a glass of beer I should drink the same in the evening, and be home and in bed when young men now are just beginning to be alive." Further: many young men at the present time have no respect for themselves. Immediately they have obtained a little extra money, they require a day or two to spend the same, and then a day or two to get fresh; in fact they owe their wages before they have earned them. I have been requested to say a few words respecting women working in the fields. I am not quite so blind as to be ignorant of the fact that women in their proper places are equally useful and much more ornamental than men. Women complain that they are badly paid for field-work; do women, as a class, generally deserve high wages when in the field? My opinion is that they can employ themselves more profitably at home nine months out of the twelve, particularly if they are good managers, and can use the needle to good account. Young women ought to go to service. I do not think that we could do without women entirely, especially in the summer time, for there are some women who will "never say die" to men, even in field-work; but they are mostly of the "olden sort." I must add that women do their work more tidily than men. Keep a regular supply of labourers, but look after them, and see that they do a fair day's work—if a man does not mind his own business, his business will forget him. Many people like the idea of "task work;" now there are many sides to that question—if you are short of hands—by placing men at "task" or "piece-work"—no doubt they do more; but masters often put their labourers at "piece-work" for the sake of not looking after them. You may depend upon it that they require just as much over-looking then as at day-work, otherwise the work is merely shuffled over. I do not agree with the system of hiring for the year. If a man wishes to leave, he had better do so; if he remains he will do you no good; but as labourers are now rather scarce, hiring is almost a necessity. I would advise masters to be kind as well as firm: no man can be expected to be trustworthy unless he is shown that he is cared for. Masters should not rely too much on those whom they may employ. However faithful hired servants may be, still a head man is required. He may labour or not, as suits his inclination and means, but the direction of affairs should remain with him. No employer ought to hire hands before inquiring into their character from their previous employers; owing to the neglect of this, farmers have reaped for themselves much of the deception practised by their labourers. Unanimity is required. Steam-power is undoubtedly a great economy. Sir John Herschel observed, that in reaching the summit of Mont Blanc, a man must toil for four or five days in succession whilst two pounds avoirdupois of coals in a steam-engine would be able to lift him up to that height in a few minutes. Steam-power is considered cheaper than horse-power, for the hard work of a farm; it enables a farmer to perform his tillage operations at the best season of the year. Deeper cultivation can be obtained, and the steam-cultivator, plough, or harrows may be frequently worked to advantage in a dry season, when it would be impossible to work with horses upon a stiff clay land. Again, at the present time, men not only want higher wages, but do they do so much as men used to do? I fully expect that grass and corn will have to be cut by machinery. Without doubt, grass and corn especially can be cut at less expense by machinery than by the hook, but do you think that the decrease in expense will requite for the additional waste? Men do not like to cut wheat the machine leaves. If men were willing to expend as much labour after the machine as when using the hook, I consider that cutting corn by machinery would be a benefit to them, because your regular hands could do the work, which would be preferable to cutting a little at a high price. The mechanical production of physical want is a department of human labour, in which all experience warrants us in anticipating the greatest economical improvements; and true philanthropy can hardly devote itself more wisely than to the furtherance of such inventions, as well as the suppression of that distrust of their accomplishment, which often delays the progress its incredulity discourages. In conclusion, gentlemen, I believe that in course of time, agriculturists, like water, will come to their proper level. At a recent meeting of the Swindon Farmers' Club, Captain Horsell said: "The farmer is the great middle man between poverty and wealth, between labour and capital, between the many and the few. In the hour of distress the battle always falls back on him. According to the constitution he is a responsible man. The landlord is comparatively unknown to the law whether he lives abroad all his days, and is never heard of, or resides in the heart of his property, he may be equally a nonentity. In respect of that property he has scarcely a legal obligation. He is a sleeping partner in the concern, but of course no partner at all. The tenant is looked upon as the universal paymaster. In half-an-hour's walk, from almost every market-place in the kingdom, you find yourself under the sway of these powerful and responsible potentates. Once among the green fields and hedgerows, and the tenant farmer is your immediate superior. The road you are riding upon, the ditch you leap over, and the bridge you cross are maintained by him. If you damage a fence it is his, the cattle are his, the labourers are in his pay. He greatly assists in keeping the carpenter's bench, the saw-pit, and the forge at work; the village public-houses are chiefly supported by his servants and labourers. If profits fail, he has to draw on his capital to keep things going; if wages are reduced, he has to bear the odium; if disaffection spreads, his ricks are burned; when he can no longer pay wages, he must still pay rates. If there are widows, or orphans, or old men, or cripples, or sick, or vagrants, the tenant-farmer must maintain them." Gentlemen full of complaints, as are the words of Captain Horsell, can you deny the truth of them? In addition to the general routine of education now pursued by young men, those intended for agriculturists should go through a course of practical farming. Mensuration, geometry, book-keeping, chemistry, botany, and geology should be added to the usual routine of school duties. Lectures on vegetable and animal physiology and veterinary surgery might be given. Knowledge of this kind would greatly add to the power and resources, to say nothing of the respectability of the persons who possessed it. Knowledge is a species of capital which is found of great value in the absence of more available advantages. We cannot do without money, but the day is fast passing away when all that men care about is in having their pockets full, and being worshipped in their parish because they are well off and living all their lives near people who show respect to them, but in reality admiring their wealth. Most reasonable persons now-a-days like to be able to converse and mix in company when from home as well as at home. I'm afraid that I am rather mercenary, but I envy the experience and expanse of views that may be procured. Gentlemen, we see agricultural colleges being erected and members arousing themselves; there is no science in which a talented man can better show his merits than in that of agriculture. "It is not a man's calling that ennobles his character; but a man's character that ennobles his calling." I can hardly say that agriculturists, as a class, have done many huge deeds in the world, but I consider that they have been of the same value that a fugitive sunbeam would be in a gloomy and heavy wood, or as a daisy in a desert. How dreary would be the future musings of the nation at large if our labours in agriculture were sure to fail! I will resume my seat by reciting these four lines of Tusser's:

> "Good luck to the hoof and the horn,
> Good luck to the flock and the fleece,
> Good luck to the growers of corn,
> With the the blessings of plenty and peace."

At the conclusion of Mr. Stephen's paper, a brief discussion took place. A vote of thanks to the lecturer terminated the proceedings.

CURE FOR ROUP, (Editors *County Gentleman*).—Below please find remedy for roup or swelled head in fowls: Two tea-spoonfuls rum; wheat bread sufficient to absorb it. Cram this down the fowl. After six hours, repeat the dose; twelve hours after, give eight drops laudanum on bread; give water only when the fowl will drink. At intervals give soft bread and raw fresh meat, by cramming. The above treatment has never failed in my hands to cure.—R. *Elmira*, *Aug*. 18, 1866.

DEATH OF MR. W. FISHER HOBBS.

This well-known agriculturist died at his house, Boxted Lodge, near Colchester, on Thursday, the 11th Oct., in the 58th year of his age. He had been in delicate health for some time past, and for the last few months had been almost entirely confined to his room, as for a year or two previously he had been seen but little in public. One of the last occasions, indeed, upon which he took any prominent part in the proceedings at any of our great gatherings was at the Newcastle-upon-Tyne Show of the Royal Agricultural Society, in 1864, where he acted as one of the judges of dairy stock. He was, however, so unwell at the time, that he had to leave for home on the same day, having just before this been taken very suddenly and seriously ill while on a visit to his friend, the late Mr. Richard Garrett, during the Meeting of the Suffolk Agricultural Society at Saxmundham. He never, in fact, recovered from that attack; or, to adopt a somewhat homely phrase, was not the same man afterwards.

Mr. William Fisher Hobbs will deservedly occupy a very prominent place in the annals of modern agriculture. There were few of his fellows so well grounded, and none perhaps who united so thoroughly practical a knowledge of the business of the farm with those scientific acquirements which he did so much to develop. He was at all points one of the best judges of stock that ever entered a show-yard, and equally at home with cattle, sheep, pigs, or cart-horses. Then, he was well up in implements, while he could set a furrow and put a labourer right in almost any work upon which the man might be employed. But, famous as he was for his improved Essex pigs, his Herefords and Alderneys, or his Southdowns, it was in the more general service of agriculture that Fisher Hobbs came to be distinguished. He was one of the founders of the Royal Agricultural Society of England, as for more than twenty years he was one of its most useful members. As one of the Council, as the chairman of a committee, or as a steward of the show, his energy was indomitable, and his administrative ability as excellent. He put a very high rendering upon the duties associated with such appointments, and neither favour nor influence could make him swerve from his point. At the meetings in Hanover-square he was heard with marked attention, as few had more weight, regarded, as he was, as the leader of the more practical element in the Council Chamber. Men of all ranks, however, were as anxious to know "what Hobbs had to say about it," and perhaps in no other place did he stand so well. Still, he was equally active at the Smithfield Club, where he was in turn an exhibitor, a steward, and a judge; while he was one of the oldest members of the Farmers' Club, of which he had been chairman, and where he opened several of the discussions, his papers on the Beer-shop Nuisance and the Law of Copyhold more especially having been received with marked effect. He was also known here as the consistent supporter of the Tenant-right principle, and as determined an opponent of the Malt Tax and the Law of Settlement. In what may be termed the politics of Agriculture he took, indeed, a strong interest, and at one period he might, had he so chosen, have been most probably returned to Parliament. But he was well content to be more directly identified with the cause for which he did so much, and at the time of his decease Mr. Fisher Hobbs was a Vice-President of the Royal Agricultural Society of England, a member of the Council of the Smithfield Club, one of the Committee of the Farmers' Club, one of the Council of the Royal Agricultural Benevolent Institution, as well as a supporter of many similar societies in his own and other counties. He was also well known abroad, and had frequently given his services to the Paris and other Agricultural Expositions in France.

Mr. Fisher Hobbs, who was born at White Colne, in Essex, was the son of a Kentish yeoman, by whom he was early inculcated into the business of the farm; but his education was completed in Leicestershire, where he was with Mr. Stone, a pupil of Bakewell, and renowned for his own flock of Leicesters. On his return he studied for some time further in Suffolk, and then took a farm at Mark's Hall; but succeeding to a good fortune on the death of his uncle, Mr. Fisher, he removed to Boxted. Here, so long as his health permitted, he also farmed extensively; although, from the public calls upon his time, he was not much at home. He was a good shot, and inherited some of his father's fondness for cricket; but he was not often of late seen with hounds, and thought more of breeding a Suffolk Punch than a hunter. Like most men, Mr. Fisher Hobbs had his failings; but as a friend—we might almost say as a slave—to the cause of agriculture, none have ever laboured more conscientiously and few to a better purpose. His great practical knowledge, his untiring industry, and a certain quickness of observation, were of immense service, backed as these qualifications were by ample means, and with no family ties to interfere with his public pursuits, for he died unmarried. Just as his health began to fail, the more general recognition of these labours evinced itself in the proposal for a testimonial picture, and the portrait is now on the easel of Mr. Knight, the Royal Academician, although, from the continual illness of Mr. Hobbs, the artist has had but few sittings. There is little doubt, however, but that the painting will yet be finished.

VALUE OF WOOD ASHES.

Different kinds of wood, when burned, will produce ashes of quite different value, not only for promoting the growth and fructification of crops, but for culinary purposes. And, if farmers only knew their value as a fertiliser, there would be no ashes wasted, neither would there be any for sale, excepting by those people who have no soils to improve or crops to raise. A distinguished writer on agricultural chemistry, in a communication to the *Albany Cultivator*, says: "Several salts are necessary for a full growth and maturity of a wheat crop. In using the superphosphate of lime, the farmer uses but one of the salts necessary for the perfection of a wheat crop. But in the use of ashes the farmer applies to his land, besides the several salts of potash, more or less of several other salts, no less valuable, according to the kind of timber from which the ashes were produced. Ashes from the beech contain nearly 20 per cent. of the salts of phosphoric acid. According to the analysis of De Saussure, one hundred pounds of ashes would be sufficient for the production of 3,820 pounds of straw. But, besides the other salts of potash, the ashes either furnish, ready prepared, or produce after being put upon the land, a good supply of the silicate of potash, a salt as necessary as any other salts of potash, or even as any salt of phosphoric acid. But the ashes, besides furnishing several important salts, may perform another office in the economy of agriculture, no less important. In the preparation of compost, they may be used as a solvent, to convert into important manures many other things useless without being dissolved. And this, too, without destroying any of their efficacy as salts. They give compactness to light sandy soils, and render heavy clay soils light and friable. They serve, too, to neutralise whatever superabundance of acids there may be in any soil."

Every observing farmer has noticed how luxuriantly grass or grain of any kind usually grows where a brush-heap or log-heap has been burned; and, also, how superior the grain usually is, both in quality and in quantity, which has grown on such places. This consideration establishes, beyond a doubt, the fact that unleached wool ashes are excellent fertilisers, and are of more real value to a good farmer when they are applied to a crop than when they are sold for the purpose of making potash. Unleached ashes are far superior to leached ashes, because they furnish a large supply of fertilising material, which makes the straw more stiff than it otherwise would be. Therefore if the straw of cereal grain can be rendered much more stiff by sowing a few bushels of wood ashes per acre, of course there will be a much greater yield of grain if the straw can be kept erect, than there would be if the straw is so limber that it falls down before the grain is harvested. Ashes, whether leached or unleached, are very valuable for promoting the growth of any kind of grass, when they are sown broadcast over the fields; and Prof. Liebig recommends sowing ashes on meadows, for the purpose of increasing the quantity of grass for hay. On some soils ashes appear to exert almost a magical influence in promoting the growth of cereal grain as well as the growth of the grasses.

Wood ashes, either leached or fresh, in some places can be obtained in large quantities, and at reasonable rates, especially at the pot and pearl-ash factories. Leached ashes contain but little potash compared with the unleached; yet they have in their composition all the inorganic or ash constituents of our cultivated crops, and their application to light dry soils generally exhibit very favourable and marked effects, much improving their moisture-retaining qualities, and highly favouring the growth of corn and grain.—*Weekly Age.*

THE NEW NUMBER OF THE ROYAL AGRICULTURAL SOCIETY'S JOURNAL.

At this off-season, with the ingathering getting on to completion, a new number of the *Journal* of the Royal Agricultural Society should be particularly well timed. Indeed, the appearance of the Part may be regarded with more than ordinary interest, offering as it should do something of an index to the future of an institution, that of late has had no very great hold upon the public, and whose fortunes are supposed to have suffered accordingly. In this respect, however, the conduct of our national organ is singularly weak and defective. Nine or ten of the dozen papers here put together would have read just as well two or three years since, or might have been kept back for two or three years more without material inconvenience to any one. Prize Essays like those of Mr. Moscrop on the Farming of Leicestershire, of Mr. Dixon on the Mountain Breeds of Sheep, or of Mr. Little on The Improvement of Waste Lands connected with Mines, of course more or less edit themselves, as such productions are fitted to no especial epoch. Still, such standard treatises should surely have been supplemented by contributions more material to the crisis through which we have passed, and the losses we have sustained. But it is not so. The other lengthy and more elaborate articles would go equally well on a swivel, so as to come in just whenever they might be wanted, for they turn in little or no way upon the momentous events of last year, or upon things that are still uppermost in men's minds. Mr. Algernon Clarke writes pointedly, and evidently with his heart in his subject, on The Production of Poultry, and Professors Voelcker and Coleman go very practically into the question of how far the improvement of grass land can be warranted. Dr. Voelcker supplies another paper on Clover Seeds, and Mr. Buckman also takes the clover plant as his text word, while Mr. Lewis engages himself upon the very vexed question of Agricultural Statistics. A mere enumeration of these contents will show their adaptability to any occasion, and the little influence they can exercise in relieving us from a difficulty that has not even yet quite passed away, or in guarding us from any further danger. It must be clearly understood that we do not by any manner of means attempt to disparage the worth of the papers we have here cited. On the contrary, we should, with an exception or so, estimate their use and value very much, as did the judges who awarded the prizes, or the committee who availed itself of the other articles we have mentioned. It would be almost impossible to have these several topics better treated; or if we did make any exception, it would be against Mr. Lewis' argument on the necessity for agricultural statistics. Such a matter no doubt requires delicate handling, but it is going rather too far to assume that any failure hitherto has been altogether attributable to the inefficiency of the Government. We know of many good men who refused to fill in the returns last issued; and if, as Mr. Lewis says, the less intelligent class of farmers evince a jealous distrust of supplying information, these might be matched by members of even the Council of the Royal Society itself. Still, more eggs, mountain sheep, the improvement of grasses or waste lands, cannot any of them be said to go very directly to the main topic of the time; although, if we remember aright, Mr. Howard Reed's review of the cattle disease, as given in the previous number of the Journal, was offered at the time only as the prologue to something to follow hereafter. This promise has certainly not been kept in the present number. Professor Simonds has not furnished a line upon the subject, and all we have are the abstract reports of the discussions opened long ago by Lord Cathcart and Mr. Farr. The last-named of these gentlemen has amplified his address on cattle insurance in a separate paper; but if any member of the Society would have ever been likely to read the accounts of these Wednesday's proceedings, it would have been when they appeared in our own columns, or those of our contemporaries. The very prize-list for 1867 as thoroughly ignores the existence of the cattle-plague as if we had never had such a visitation for the last hundred years. There are offers for papers on the farming of Huntingdonshire and Westmoreland, for farm customs and covenants, for ploughing-in green crops, for loans for improvements, for the drainage of grass-land, for farm poultry, for labourers' dwellings, for a history of Herefords, and for the diseases of sheep, but with no reference whatever to the diseases of cattle! Surely we cannot have so far conquered these! surely the veterinary art has not advanced so far that we can afford to stop where we are! With our medicine-men absolutely powerless, the aim at least of the Royal Agricultural Society should have been to seek aid elsewhere, or to draw some deduction, to devise some more systematic means for our future safety from the terrible ordeal we have undergone. With really nothing else to do, such indifference at such a time is almost unpardonable.

In fact, there is but one paper to the point in the new Number, and that one is Mr. Herbert's on the supply of meat to large towns. The tone of this, moreover, is not encouraging; for it goes directly against the establishment of dead-meat markets as equally unprofitable to the producer and consumer. "Let us suppose," he says, "that the Metropolitan Market for the sale of live stock was abolished. The live stock imported from the Continent would, of course, be slaughtered in abattoirs erected near the place of landing—say at Blackwall. The supplies from Ireland would, in all probability, be disposed of and slaughtered at Derby, from whence they would be transferred to London per railway. In that case, the carcases of the foreign beasts, sheep, lambs, and pigs, though far inferior in quality to our best breeds, would have an undue advantage over our own country-killed meat, simply because they would make their appearance in the butchers' shops in a more saleable condition. Those who are not practically acquainted with the general bearings of the trade may feel disposed to doubt these assertions; but it is a fact that both beef and mutton killed in Scotland, Yorkshire, &c., invariably produces 2d. per 8lbs. less money in the metropolis than meat of a similar quality slaughtered in London." Against this proposition one might be inclined to ask how is it that so much prime beef continues to be sent as *beef* from Aberdeen to London? However, Mr. Herbert maintains the argument, though not with so much force, when he puts the wide difference "between the cost of sending live animals and dead meat to London from a distance. A bullock can be transmitted per railway and steamboat over 200 miles for 20s.; to that sum must be added about 4s. 6d. for commission and charges. To transmit four quarters of beef, the hide, and rough fat to the metropolis, the same distance—assuming that the animal weighed about 100 stones—would cost nearly £4, exclusive of the expenses of slaughtering and the payment for commission, viz., 1d. per 8lbs. No doubt agents would be despatched to the provinces by some of the large London houses to purchase hides, skins, fat, &c., so as to some extent to relieve the graziers." No doubt, as Mr. Herbert says, there would be some agency of this kind;

or, in other words, the trade would to a certain extent be revolutionized; but even as it is, putting the offal, fat, and so forth, out of the question, how does it happen, even under existing circumstances, if dead meat pays so badly proportionately with live stock, that country butchers kill at home and send their best joints up the line? The plan would seem to be nothing more or less than making a loss. Still, Mr. Herbert's paper is eminently useful and suggestive, forcing as it does the consideration of how far the abattoir system would give the foreigner an advantage over the home producer? Admitted that the closer the beasts are brought to the market the better will the beef be, is it altogether so impracticable to establish abattoirs for English stock at Highgate, Camden Town, or Islington, when we can make similar arrangements for the reception of foreign stock at Blackwall? Mr. Herbert is, however, dead against any such change as that contemplated, while he supports his own views by citing the oft-quoted abattoir system of Paris as having in reality very little force, if not, in fact, more or less of a failure: "The quantity of country-killed meat disposed of in Paris is, as will be seen, small compared with the total consumption. Such, indeed, is the case in London, and no legislative or other interference could possibly change the present system. Those who imagine that it would be an easy thing to work a beneficial change, forget that meat is a perishable article and very expensive to move. Moreover, it should be remembered that the consumers in London would, in the event of the live-stock market being abolished, be compelled to pay much higher prices for meat, to cover the expenses of carriage, &c., and that we must have competition in the trade, or we should have a great amount of dissatisfaction amongst the great consuming classes." Again, we would ask why should there not be competition in a dead-meat as well as in a live-stock market? But in doing so, we are quite ready to admit that Mr. Herbert speaks with authority, and that his paper will set men a thinking over a matter on which many had probably already come to a conclusion. Such words in season give a date as it were to the new *Journal*, and we can only wish there were more of them.

IRISH AGRICULTURE: THE CULTIVATION OF FLAX.

At the Enniscorthy Society's Meeting Mr. GEORGE, M.P., said: The originators of these societies will need all the efforts and vigour, and all the energy they can muster to keep them in the position they no doubt ought to occupy—that of being the leaders of societies like this. The landlords of this county, as a body, will require to put forth very great efforts indeed, not only to lead the van, but even to keep pace with the efforts being made by the farming class of this county. It was stated yesterday, at Gorey, by the judges, Sir Robert Paul and Mr. Moffatt, that they were perfectly astonished at the progress made by the farming-class of this county. The first prize for the best animal in the yard—the best bull, for which there were six, seven, or eight competitors, was carried off by a tenant farmer. I don't altogether despair myself of being able to get the first prize another year, as it has yet to be decided by the judges whether the animal I myself exhibited is not entitled to the second prize. I think it is quite plain that what has taken root at Gorey has spread to this part of the country also. In sheep farming, and the breeding of rams in this part of the country, the landlords will require all the efforts they can possibly make use of, to keep pace with the farmers. And although in one sense it may be a matter of reproach to the landlords, I think it is one very great proof of the benefits that have been conferred by these societies. Nobody can suppose the object of the landlords of the county in establishing these shows was to secure their own interests alone, or for the benefit and improvement of their own stock. Their object must be that of benefiting their tenantry, and the tenant-farmers of the country at large. I think it is a matter of gratification to every landlord of the Gorey union to find they are now begun to be beaten with their own weapons. After some few further remarks, the hon. gentleman proceeded to say: It is for us now to thank God that we have escaped a pestilence that has devastated our sister island, England, and which would have been all but absolute ruin to this country if it had reached us. In warding off this disease, the Royal Agricultural Society took a most active part. And it is owing in a great measure to the exertions of that Society, under the guidance of Lord Naas, that such active steps were taken to ward off the pestilence from this country. The discussion occupied weeks of the time of the House of Commons, while the disease was spreading and inflicting most terrible injury in different parts of England, before any final steps were taken to get rid of it. In reference to Ireland, and I say it to its pride, that Irish members of Parliament expressed a bold opinion that some measure should be at once passed to stamp out the disease, no matter whether taxation was increased on cattle slaughtered. And the consequence was, that in a very short period they got that Act passed that gave them the fullest powers to prevent, as far as possible, the spread of the disease in Ireland. The steps taken, under Providence, have been successful; and I trust we may all now hope that the immunity from the disease we have had so far will be still continued. You are all probably aware that for a considerable time in England half the medical relief and the educational charges in poor-houses has been discharged from the consolidated fund, although the entire of these charges, up to the present time in Ireland, have been taken from the local rates. It is a matter of congratulation to us that, by a resolution of the House of Commons, for the future one-half of these charges in Ireland will be taken from the consolidated fund, instead of being chargeable to the local rates.

Mr. H. ELLIS said: I think any branch of agriculture in Ireland that has been crowned with success this year ought to be mentioned at a meeting of this kind, and to consider it with a view to its general adoption. I wish, therefore, to say a word or two on that branch of agriculture in which I am concerned—flax. Mr. Chairman, I think I may say flax is the needle-gun with which the men of Ulster drive everything before them. I see no reason why flax should not be cultivated on the banks of the Slaney, as well as on the banks of the Lagan. I will say, with your permission, a few words about the present state of the flax crops in Ulster. The market price of dressed flax in our neighbourhood, the week before last, was 11s. per stone. An acre of ground will produce about 80 stone of dressed flax. At 11s. per stone this would realize about £44. Now, sir, if from this we take the expense of sowing, growing, and dressing, which will amount to about £11 per acre, we have £33 as the net value of the produce of an acre of dressed flax. £30 is above the value of an acre of land such as produces flax. One year's growth of flax, therefore, is worth the land on which it grows. That is a good story to tell of Irish agriculture this year. Belfast will produce this year about £7,000,000 worth of flax, and in return should make more than ten times seven millions of money. This is another good story, too; and the trade is not likely to fail, for every year it is extending. Ireland is at present at the head of this branch of manufacture. I see no reason why Wexford should not grow that portion of flax which Belfast at present requires, in addition to what is now grown in Ireland. I think I see no reason why, on the banks of the Slaney, flax should not be produced which is at present produced in foreign parts, especially as Wexford, by taking that course, will not enter into competition with any Irish interests, but will only supplant Belgium and Russia.

Mr. BOLAND said: The show had been a first-rate one. One great feature in it was the fact that the working farmers of the county were coming forward and producing animals superior to their more wealthy, and, therefore, more able, landlords and neighbours.

LEICESTERSHIRE AND WALTHAM AGRICULTURAL SOCIETY.

MEETING AT LEICESTER.

The show of the above Society, which was confined on this occasion to horses and poultry, with the usual supplementary premiums for ploughing, labourers, and roots, took place at Leicester on Tuesday, Oct. 19. The two sections of riding and cart-horses, together with the pens of poultry, were arranged in the first instance in the yard of the Bell Hotel. The space at the command of the stewards was here, however, so terribly limited and the crowd so great, that the judges of "the nags" refused to proceed, and an adjournment took place accordingly to a field on the outside of the town, where there was really room to try a horse, and whither the great body of the spectators also followed, the cart-horses and Mr. Hewett with his chickens being left pretty much to themselves. And the hunters and hacks unquestionably furnished the great feature of the meeting, every class being numerically well filled, and some of the entries being of a very high order of merit. This was more particularly the case with the hunters, where in the All-aged All-England class there were no less than fifteen nominated, pointed by three or four particularly clever animals to pick out, as the judges were not long in doing. Their first and second prizes were still of a very different stamp, Mr. Tailby's Irish horse being all over a Leicestershire nag, full of blood and fashion, and flying his fences famously; whereas the Bedale chesnut is a great banging weight-carrier, up to almost anything in reason, but with scarcely pace enough for the Shires. Nevertheless, Mr. Gilford, who had a nice business-like bay in the class, bought up the Yorkshireman at something under two hundred, while Mr. Waldy admitted at the dinner, that he had been fairly beaten by Mr. Tailby's horse, "than which he would not wish to see a better, though not equal to more than eleven stone." About the best of the remainder was Mr. George Cooper's blemished chesnut, who looked and went like a workman, a compliment that could not be extended to some of the others. Of the four-year-olds the two prize horses were far away the best, with no great deal of choice between them, though the public voice went altogether with Mr. Sanders' chesnut, which was placed first. It is not encouraging to report that a long way the worst of the hunting stock were the two-year-olds, the brood mares, and the foals. Of the thirteen two-year-olds there was really not a prize-horse amongst them, though the premium eventually went to a brown colt of Mr. Hobson's by a thorough-bred sire, but very coarse forward, though with capital quarters, thighs, and hocks. A great majority of the others were more like harness than hunting purposes, and even Lord Berners has not yet learned the lesson which his fellow-members of the Council of the Royal Agricultural Society have, it is hoped, got off by heart by this time, for he entered a couple of great grown things, absolutely got by a half-bred horse! Not quite the material with which to cross Leicestershire. His Lordship did better among hacks, where he took second with a light, lathy, galloping cover-hack by Ben-y-Ghlo, the first prize going to a very pretty pony, for she was little more, exhibited by Messrs. Berridge, while Mr. Milward's famous British Queen and high-stepping Crisis were both passed over, though the judges hung for some time to the roan, as very probably trying to see how it was she had finished so forward elsewhere. However, there was no go about her at Leicester, and we believe even her owner allowed that she was fairly beaten for first. With the cobs, on the contrary, Mr. Milward had it all to himself with the *multum-in-parvo* Dunstan, and a wonderfully lively little chesnut, that if not up to all the weight of the other, had a deal of merit in other ways, if not quite of the cob character. Of the hunting-mares, Mr. Smith's prize was a very neat one, her foal also winning the prize as the best, by Mr. Tomlin's stallion Mowbray; but the competition here was not great, and the foal class should be thrown open to anything by a thoroughbred sire. Amongst the other mares, Mr. J. N. Beasley showed a blood-like old dowager by Burgundy, and Mr. S. W. Coleman a grey of some character, but the lot were otherwise very deficient of merit; in fact, the farmers of Leicestershire would seem to be hardly up to the breeding of hunters—a point that was proved in the open class, where the first prize came from Ireland, the second from Yorkshire, and the high-commendation from Shropshire. There are no thoroughbred stallions shown here, and the premiums for cart-stallions were awarded in the spring, when Mr. John Manning, of Orlingbury, took the first prize with Black Prince, and Mr. W. Saunders the second with Glendon. Neither of these was now on the ground; and as the business commenced about two hours at least too late in the day, there was really no time to look through the other classes of cart-horses; of which, however, Mr. Spencer said at the dinner, "he thought that, in one respect, the horse-shows were better supported forty years ago than they were now, namely, in the class of black fillies. Cross-bred animals were too numerous; but if they had good cart-mares and thoroughbred horses, the little farmer would be able to obtain, at Michaelmas-time, a good price for cart foals. Their teams were not half so good as they used to be, with the 'tiddlewidlums' they now had." Nevertheless, it will be found there were a number of commendations, and three or four very fair yearlings exhibited. There was a tolerably good show of poultry, with a few roots and cabbages; and Ransome and Sims's man Barker won the champion ploughing-match; the Howards being, of course, not in competition.

PRIZE LIST.

HORSES.

HUNTERS AND HACKS.

Judges.—H. Corbet, Farmers' Club, London.
W. A. Pochin, Edmonthorpe Hall, Leicester.
Captain J. Skipworth, Howsham, Brigg.

Geldings or mares, not less than five years old and under ten, open to all England, £20, W. W. Tailby, Skeffington Hall (Orangeman). Second, £10, J. Waldy, St. Gregory's, Bedale (Sam Weller). Highly commended: W. Gilford, North Laffenham.

Geldings or fillies, four years old, adapted for hunting purposes, bred within the limits of the Belvoir, Quorn, Mr. Tailby's, Cottesmore, Atherstone, and Pytchley hunts, £20, Mr. H. Sanders, Chapel Brampton (gelding by Kentucky). Second, £5, Major Knight, Glenn Parva Manor (gelding by Harkaway).

Geldings or fillies, two years old, adapted for hunting purposes, bred within the limits of the Belvoir, Quorn, Mr. Tailby's, Cottesmore, Atherstone, and Pytchley Hunts, £5, J. Hobson, Isham (gelding by Lovett). Commended: J. S. Clarke, Peatling Parva (gelding by Hurworth).

Mares calculated to breed hunters, that shall have suckled a foal, or in foal, £10, A. Smith, Great Bowden Inn (bay mare). Commended: J. N. Beasley, Chapel Brampton (Geraldine).

Hacks not less than fourteen hands and a-half, and not exceeding fifteen hands, £10, Messrs. J. and E. Berridge, North Kilworth. Second, £5, Lord Berners.

Cobs not exceeding fourteen hands and a-half, £5, R. Milward, Thurgarton Priory (Dunstan). Second, £3, R. Milward (Harmattan).

Foals by Mowbray, £4, A. Smith, Great Bowden Inn. Second, £1, R. Swain, Stoughton.

CART HORSES.

JUDGES.—G. Smith, jun., Leighton Buzzard.
F. Spencer, Claybrook.
R. Walker, Great Bowden.

Geldings or fillies, two years old, £5, Ann Bass, Aylestone. Second, £3, J. Wright, Sysonby Lodge.

Yearling geldings or fillies, £5, Ann Bass. Second, £2, T. Allen, Thurmaston. Highly commended: H. Burgess, Middleton. Commended: T. Allen.

In-foal mares, £10, W. Black. Second, £5, Wm. Carver, Ingarsby. Commended: Wm. Rippin, Cranoe.

Foals, £5, Ann Bass. Commended: W. Rippin, Cranoe, and W. Carver, Ingarsby.

The dinner took place at the Bell Hotel, Lord BERNERS in he chair, who said that they had had a most creditable show f horses on that occasion. He might mention that in Yorkhire these shows were considered as advertisements, the exhiition of good yearlings or two-year-olds by breeders ensuring heir names being put down for the London markets. It was great object that Leicestershire, which was so celebrated for s sheep and grazing grounds, should stand high in the kingdom for its breed of horses. One of the peculiar characteristics, f he might so call it, of this Society, in which it differed from ther Societies in the kingdom, was that they always considered their duty to exclude at their meetings anything that could e construed into party politics: but at the same time they lways reserved to themselves the right, and indeed encouraged much as possible observations on purely agricultural subjects, lthough they were coming before Parliament. On these occaions they had petitioned Parliament on various subjects that hey considered regarded their welfare, and he hoped the Society ould always continue to do so, for he held it one of the great bjects of these societies, that when they met together they hould have an opportunity of expressing their opinions pubicly and freely upon subjects affecting their interests; especially the farmers not meeting together, or having the means of eing called together as manufacturers were in the town, had ot the same means of making known their wants which other lasses possessed. He believed it was for the want of that, and e want of union, that the claims of the agriculturists of this untry had been put aside when those of other classes had een conceded. He might just remark that one of the things r which they had petitioned, and which he had for more than irty years advocated, was the abolition of the malt-tax. He ould just allude to the report of last week as to the cattleague, which many of them, no doubt, must have seen in the apers. How much they must rejoice that that was rapidly ecreasing in the country, and that they had been favoured far bove other counties in this matter. Under Providence he atibuted it much to the good feeling that had existed among e occupiers of land, and the manner in which they had cheerlly submitted to the troublesome process of coming to magisates and the local authorities for licences. But he did believe at it was because they had carried out the rules and regulations of the Privy Council strictly and rigidly, and because e farmers had assisted and had seen the necessity of it, that ey had reaped the inestimable benefit of having so little disse in this county. He took out some figures relating to this bject from a Parliamentary return the other day. From this found that Leicesterseire contained an area of 514,154 res, and if he compared that with the acreage of all other unties, he found that the number of cattle to the hundred res was 17 3-10ths, while there was not another county in gland except one which approached that, and that was 2-10ths. The total cattle in this county up to March 5th s 89,115 head, and up to March 3rd, it was reported that ere were only 226 diseased. There were slaughtered out of at number 171; and the total reported of the back numbers d been only 427, of which 219 had been killed, 160 died, 46 covered, and 2 were unaccounted for. Compare this with Cheshire, in which were 707,000 acres; the number of cattle to the hundred acres was 13 3-10ths; and out of those 36,443 had been attacked, and taking altogether 67,000, of which 23,000 had been killed, 32,000 died, and 8,000 only had recovered. He would make one remark upon that, and no doubt they would bear him out in it, that during last year there had been an extraordinary decrease in other diseases, and pleuro-pneumonia among the rest. He thought that good had come out of the evil of this cattle plague; the cattle imported from Ireland and other places had not been brought over in such large numbers together as they used to be, and consequently they had not become so heated in the steamboats, and had not been crammed together so much on the railways; they had not been exposed so much as hitherto to be shunted into sidings and kept so long on the road; and another great thing was, that in consequence of the disease the orders of the Council had been such that the trucks had been kept a great deal cleaner than they used to be. He thought that was one good which had come out of the evil. To go to another subject, the disease had prevented the meeting of the Royal Agricultural Society and Show of Cattle being held at Bury, and consequently the chance of having the Royal Society here until 1868. The Show would be held at Bury, in 1867, and the next year in the Midland Counties. The town of Leicester came forward, as he was given to understand, in the most handsome and liberal manner, and were ready to support the meeting as much as possible; and he must now remind everyone of them, that it was desirable they should all put their shoulders to the wheel, and all subscribe their mite to attain that great good which was conferred upon a county by the meeting of the Royal Agricultural Society in it. There was one other point to which he wished to call their attention, which they had also been in the habit of petitioning upon, and that was on the poor rates, and the general system of rating, showing how much in proportion to other classes the land had been taxed. Now a great advance had been made in the right direction by having union rating, but that would not be just if it was not succeeded by something that he had the honour of proposing eight or nine years ago in the House of Lords, which was that the system which was adopted by the late Sir Robert Peel, of paying a portion of the expenses of criminal prosecutions, should be extended to the poor rates. Now there could not be the slightest reason, in justice or equity or common sense, why the land only should pay the expenses on account of the Registration Act. There could be no reason why they should pay the fees of the clergy and other matters connected with the registrars, or for vaccination, or Parliamentary and municipal registration, which amounted to no less than £173,108 annually. The farmers had no interest in it more than the rest of the public. The poor rate collected amounted to £9,874,000, and out of that only £6,000,000 was expended upon the poor. He hoped their attention would be called to these matters; and if any union was inclined to petition Parliament on the subject, he should not only feel it his duty, but an honour, if they would entrust their petitions to his care in the House of Lords, and would take care they were brought before the proper quarter. One word and he had done, the amount of payments not connected with relief was no less than £2,378,006. (A voice: "That is the highway expenditure.") Out of the nine millions collected by the poor rate, six millions went to the relief of the poor, and the sum he had mentioned was expended for matters entirely unconnected with it. Yesterday he received a letter, which he would now lay before them. It was one of very considerable importance. No doubt, if the market for cattle was not opened, it might subject many of them, and especially small occupiers, to inconvenience; still the danger was so great if it was opened that he thought it was well worthy of their consideration, and he should feel extremely indebted to them if they would express their views, that he might communicate them to the Town Clerk and the Corporation. He had studied the thing very carefully from the first commencement of the disease—he had looked into it as well as he was able to do; he had conversed with the authorities, and consulted the scientific men, and those on whom he could place the greatest reliance; and he did not hesitate to express the opinion that if in the first instance the Government had carried out the views of the Council, if they had stopped the importation of cattle, or if they had not chosen to do that, if they had had them slaughtered on the spot, or put them under a quarantine of fourteen days, the disease might have been stamped out months and months before it had been; and that it was the stopping of the general traffic through the country, and the withholding the power of having fairs in the towns, that had reduced the disease into such a narrow compass. The Northamptonshire gentlemen knew that six bulls brought down from London communicated the disease in six different places in Northamptonshire. He did not say that every case could be traced, but there were very few cases that could not be traced to the introduction of animals from other parts of the country. His lordship then read the following letter:—

"Leicester, 5th October, 1866.

"My Lord,—Observing that your Lordship will preside at the meeting of the Leicestershire Agricultural Society on Tuesday, I take the liberty of informing you that the borough authorities have been requested to consider whether it is not desirable to open the Leicester market for the sale of cattle. I understand that a memorial from the butchers and others is now in course of signature, urging the Corporation to open the market. As the opinion of the agricultural interest will, I am sure, have great weight with the Corporation, will you be so good as to bring the subject under the notice of your Society, and I shall be happy to lay any communication or expression of opinion with which you may favour me before the Committee to whom the question is referred.

"I have the honour to be, my Lord,
"Your Lordship's obedient servant,
"SAMUEL STONE.

"The Right Hon. Lord Berners."

Mr. WILLSON (the Vice-President) said he had mentioned the subject to several gentlemen, and they were all unanimously against opening the market at present. He had seen Mr. Stone himself, and he told him the Corporation were very much pressed by the butchers to open the market. No doubt, the market being closed was to them a very great inconvenience; at the same time now the county was free from the disease he hoped they should be able to keep it so, and keeping the market closed would be the best method of doing it.

The CHAIRMAN: To close the market for fat stock as well as lean?

Mr. WILLSON said, yes; it was closed. He might say the great fear the farmers had if the market was opened for fat stock was occasioned by what they remembered of last winter, and the difficulty they had with two or three gentlemen from Leicester bringing foreign stock into the market, after knowing that foreign cattle brought the disease into the country. He believed the majority of the farmers and graziers would agree with him that it was best, taking all things into consideration, to put up with the difficulty a little longer, and keep the market closed.

Mr. T. WRIGHT concurred with Mr. Willson; and, believing that the prohibition of moving cattle had caused the disease to become so nearly extinct as it was, considered that if they opened the market before it had become entirely extinct, they might become as bad as they were this time last year. Therefore it was his opinion they had better not open the market at present.

Mr. H. DRAYCOTT was convinced if the town opened the cattle market, every head of cattle that entered it must be killed, and not allowed to circulate over the county again. If not, they would very soon have the disease brought from the foreign ports to Leicester, and from Leicester to every village in the county. If the market was opened by the borough, he thought the county magistrates ought to draw a cordon round it, and not allow anything to come out.

Mr. EVERARD did not think they should use strong language towards the borough, because he believed the authorities were very anxious to deal properly with the matter, and if the opinion was expressed there to that effect, the market would be kept closed. As far as he could see, the great evil that existed when the market was open was that, if there happened to be a very crowded market, and stock was a little lower, butchers would take home two or three beasts, and keep them two or three weeks before slaughtering them, and certainly if they got disease in the neighbourhood, it would soon spread through the county.

Mr. J. WRIGHT said the consumer and producer were more interested in this matter than the butcher. If the market was opened the consequences might be what no man could predict, and, as a consumer, no farmer could say what he should pay for his meat. He knew that the butchers were subjected to some inconveniences, but as they were merely agents between the producer and the consumer, he did not think they ought to be considered. He thought the market ought not to be opened.

The CHAIRMAN briefly referred to what he thought a misapprehension on the part of Mr. Draycott, as to the intentions of the borough authorities with respect to the market, and then put the question to the meeting, when there was a unanimous vote in favour of keeping the market closed. He then proposed the "Town and Trade of Leicester," remarking that agriculture and commerce went hand in hand, and that one could not suffer without the other.

Mr. HUNT briefly responded to the toast, and observed that he was sure the town authorities had been most anxious, from all he had heard, to preserve a good feeling and act in perfect unity with the county in regard to closing or opening the market, according as it might seem desirable, and he had no doubt they would act upon the report of that meeting.

THE PETERBOROUGH SHOW.

From the expressions which fell, on Wednesday, Oct. 10, from a number of the members of this society, it is determined to make every exertion and effort to organize an annual gathering in the future equal to the facilities by which this town is surrounded. As a nursery for taking an honest pride in the art and skill of straight, even, and well-turned ploughing, this society already stands well; for 46 pairs of horses were followed by men, youths, and boys, among them being 10 farmers' sons or pupils of farmers. It is not, however, necessary to enter fully into the list of successful competitors.

The draining was generally of a most extraordinary character, surpassing everything we have before inspected. Lincolnshire, Northamptonshire, and Huntingdonshire, it is generally known, have been counties where the practice of draining has been extensively pursued. The spot selected for these trials was an old "high-backed" pasture. Hitherto the quantity has been 15 yards per man at 3 feet deep; but this year it was 9 yards per man and 4 feet deep. The extraordinary feature in the work done was the small amount of earth raised to insert the tile 4 feet deep: several of the drains were *under six inches in width at the top.* The shortest time in which 9 yards of this work was cut was 3 hours. This length, as well as many others, was as straight and level on each side as brickwork. The left-hand side was perpendicular, the other starting from the width of the top. This very narrow width, however, is not an economical plan as regards expenditure of labour when the soil is of a stiff kind; for the edges formed in the digging so catch the sides that the strain on the arms, when the long tools are used for the bottom lift, is so great that it makes very sweating work of it. One inch more in width, although one-seventh more soil, or nearly so, would have to be stirred, and raised would be less labour to the man lifting it. As a specimen of the art of draining—and this is an art—these deep narrow cuts were models worth riding many miles to see.

The animal exhibition was a meagre affair; but this is the first attempt at a local show with any pretensions, and besides, no cattle were allowed to be present. The future intentions of the committee were practically demonstrated by a small wooden shed being fitted up for the few high-bred and nursed horses. The Hon. C. W. Fitzwilliam gave £10 to be awarded to the best four-year-old gelding or filly for hunting purposes. This was taken by one of the select five at York, a chesnut colt called Duke of Richmond, the property of Mr. W. Sissons. This horse in our opinion, under good horsemanship, would make an extraordinarily good horse, as his style of moving the easiest and most elegant character, while he has ample ice for the hunting-field, all of which is combined or governed ith the most docile and calm of tempers. Mr. John Lawnce took the £3 offered as second prize with a very lively nd spicy bay. For the best hackney mare or gelding a cup the value of £7 was offered by the Society, and this was ken by Mr. George Green for a clever chesnut mare 4 years ld. For this there were ten entries. The next class was rought together by an offer by the Hon. C. W. Fitzwilliam r the best yearling filly or colt, which was taken by Mr. homas Bonser for a bay colt by Richmond. There were ght entries in this class, Mr. Odam's chesnut colt being a romising one. The same gentleman also offered £10 for the est mare suitable for hunting purposes, with foal at foot. This as a hit-or-miss class, being composed of farm hacks, bakers' ongrels between a pony and cob, and butchers' bustlers for 0 minutes' with intermediate 5 minutes' rest. Mr. Bird's ontest, however, was a very fine mare for quality and style; ut her legs, if they were ever good, were very badly damaged. he cart-mare, with foal at foot, class was composed of 8 entries, nd it was a collection that would not have disgraced a Yorkhire or even a Royal show. The first prize, a bay mare, hown by Mr. Mr. A. Provost, was an extraordinarily good anial for apparent hardness of constitution, combined with fine form and good movements. The second, Mr. Parker's, was also a capital mare; and the foal with Mr. Warwick's mare was a wonder for its age and the size of its dam. The fillies were a mean lot of six, and the three geldings were not creditable to their country. A few sheep were shown, £5 being offered for the best long-woolled ram; two, however, only were offered, the prize going to Mr. John Beecroft, of Rye, for a ram with a heavy fleece, capital legs, back, and scrags; and if he had not been a little too much like his mother about the head and face, he would have been all over a ram-breeder's sheep, and a good one too. The prizes for 10 two-shear long-woolled ewes were taken, first, by Mr. Samuel Vergette, and, second, by Mr. W. Thomas Edwards. For the shearlings of the same kind Mr. S. Vergette was first, and Mr. Odam second. The prizes for the 10 best ewes and the same number of wether lambs, and capital ones they were, were both taken by Mr. S. Middleton, of Water Newton. Mr. Beecroft had also good pens, but their coats were not equal to the prize-takers'. There was only one pen of fat wethers shown for the £5 prize, but they were deserving of the award, and were shown by Mr. Edwards. The pigs were composed of large and small whites and Berkshires, while it was shown by the decisions that the Berkshires were not the judges' favourite breed.

THE ABERGAVENNY HORSE SHOW.

The annual meeting of the Abergavenny Agricultural Society was held on Thursday. To compensate for the absence of cattle, and with the further view of establishing an annual horse show for the counties of Monmouth, Hereford, and Brecon, a plan was a short time back set on foot by a few of the leading men who direct the operations of the society, in conjunction with some other gentlemen interested in matters pertaining to agriculture; and this scheme has produced greater results than even the most sanguine of its promoters could have anticipated. True indeed the prizes were liberal, ranging from £25 downwards, and the proposal taken up with a thorough earnestness of purpose that foreshadowed success; but yet one hardly expected to find the special list of subscribers reaching to the high figures of 170. The show of sheep, though not nearly so large as it was last year, comprised some animals of much merit, both in the long-wool and Down varieties. The Radnorshires were also very good, The breeding pigs were few in number, but of average quality. In the extra stock department, two fine lots of bacon pigs—8 shown by Messrs. Tucker, and 5 by Mr. James Phillips—were very well deserving of the first-class commendations which they received. The ordinary society's prizes for horses brought about the usual number of animals into the yard, but there were few among them calling for any special notice. The two-year-old cart colts were useful; and in addition to the prize animals in the several classes, there were a few well-deserved commendations given by the judges. The special horse show was, however, the object of interest, and drew together a large company of almost every class interested in agriculture; whilst the amount of merit displayed was very encouraging for the future.

The Judges were—for hunters, harness horses, and ponies: Mr. J. Bosley, Hereford; Mr. C. E. Lewis, St. Pierre, Chepstow; and Mr. David' Brown, Brecon. For stock: Mr. J. Wigmore, Bickerton Court, Ross; and Mr. Stephens, Sheephouse, Hay.

The chief awards are subjoined:

Ram (longwool), not less than two years old.—Prize of £2 to P. Morgan.

Yearling ram (longwool), £2, J. Morgan, Triley.

Lamb ram (longwool), £2, Messrs. Tucker, Abergavenny.

For the best Down ram, not less than two years old, £2, J. Rogers, Alterynis.

Down yearling ram, £2, J. Rogers.

For the best Mountain ram, £2, M. Fothergill.

Six ewes (longwool), £2, J. Logan.

Six yearling ewes (longwool), for breeding purposes, £2, J. Logan.

Six Down ewes, for breeding purposes, £2, N. G. Price, Llancillo.

Six ewe lambs, £2, J. Logan.

Six unshorn wether lambs, £2, N. G. Price.

Ten breeding mountain ewes, £1 1s., R. Rees.

Breeding sow, £1, Mrs. Gwynne Holford.

Stock boar, £1, Mrs. Gwynne Holford.

Cart stallion, £3, D. Ellis, The Bryn.

Brood mare (not less than 15 hands) with foal, best calculated for producing a roadster or hunter, 5 gs., J. W. Harvey, Abergavenny.

Three-years-old or four-years-old nag gelding or filly, £5, W. Morgan, White House, Llanvetherine.

Two-years-old nag colt or filly, £3, T. Watkins, Llanvair.

Yearling nag colt or filly, £3, G. Pritchard, Llanvihangel.

Two-years-old cart gelding or filly, £3, J. Rosser, Triley Farm.

Yearling cart gelding or filly, £3, C. Knight.

Cart mare and foal, £3, J. Watkins, Duffryn.

SPECIAL PRIZES.

Hunter, of any age, capable of carrying 14 st., being the *bona fide* property of the exhibitor, residing in the counties of Monmouth, Hereford, or Brecon.—First prize, Capt. Heygate, Leominster, four years old (Mountain Dew); second, W. R. Stretton, Brynderwen (Kildare). Highly commended: W. Smith, Tarrington (Troublesome); and F. B. Jones, Hereford (gelding by Birkenhead).

Hunter, of any age, capable of carrying 12 st., being the *bona fide* property of the exhibitor, residing in the counties of Monmouth, Hereford, or Brecon.—First prize, W. Smith, Tarrington (The Miller); second, W. F. Batt (Silverlock). Commended: J. P. Gwynne, Holford (Paddy); F. B. Jones, Hereford (bay gelding by Wantage); and Hon. G. Morgan (Buono Core).

Harness horse, not under 15 hands 1 inch high.—First prize, J. P Gwynne Holford (Albert); second, R. Herbert.

Harness horse, 14 hands, and under 15 hands 1 inch.—First prize, Dr. Smythe; second, W. Matthews, Brecon. The class commended.

Pony under 14 hands high.—First prize, J. T. Wilson, Monson Cottage; second, Col. Lindsay. Highly commended: J. Price, Penalt, and Mr. Roberts, Brynmawr.

Brood mare, not less than 15 hands 1 inch high, calculated to produce hunters.—£5, Mr. Embrey, Much Birch. Highly commended: Rev. Thos. Evans, Nantyderry.

THE GREAT NATIONAL HORSE SHOW OF IRELAND.

This show was held on Wednesday last, and the two succeeding days, in the premises of the Royal Dublin Society. The show was a large one, embracing 303 entries in all classes and sections, very few of which did not put in an appearance. As regards quality, breeding, and action, the show of horses, in the eyes of competent judges, was a great success, and proves that Ireland is not altogether so deficient in the quality of her horse flesh as we are accustomed to hear of late years, and that she still holds a prominent position in this way.

The show of horses this year has been unquestionably a great improvement on that held about two years ago, and, if persisted in, will become one of the annual institutions of the country.

The following is the list of prizes awarded:—

Best thorough-bred stud horse best calculated to improve and perpetuate the breed of sound and stout thorough-bred horses, weight-carrying hunters, and horses for general stud purposes.—First prize, £40, William Disney, J.P. (Artillery). Second, £15, Samuel Hill (Strood). Highly commended, Lord Naas (Rapid Rhone). Commended, Richard Coffey.

Best sire calculated to get hunters, troop horses, or hacks.—First prize, £25, and first-class silver medal, John Mealey (Wanderer). Second, £10, David Kays (Blazer).

HUNTERS.

Best weight-carrier, not less than five years old, equal to 15 stone and upwards.—First, £15, William Tuthill; second, £10, Michael Gavacan.

From 12 stone to 15 stone, and not less than five years old.—First, £10, William Pasley Vaughan; second, £5, Thomas Seymour. Extra prize recommended to Richard Gradwell.

Best four-year-old colt; for the animal showing most quality and best action, first-class silver medal.—First, £10, Jonathan Bruce; second, £5, Edward Riddick. Highly commended: Michael Betagh.

Best four-year-old filly.—First, £10, Thomas Seymour; second, £5, Hon. St. John Butler. For the animal showing the most quality and best action, first-class silver medal, Thomas Seymour.

Best four-year-old colt, suited for harness.—£10, Jonathan Bruce. Highly commended: Seymour Mowbray.

Best three-year-old colt or filly.—First, £10, John Hickey; second, £5, Major Wilkin. For the animal showing most quality and best action, first-class silver medal, Henry Murray.

LADIES' HORSES.

Prize, £8, Lady Albertha Hamilton.

WEIGHT-CARRYING COBS AND ROADSTERS.

Best cob, not exceeding 15-1 hands, calculated to carry 15 stone and upwards.—First, the Earl of Meath; second, William Garnett.

Best animal from 14 to 15 hands, calculated to carry from 12 to 15 stone; and for the animal showing most quality the best action in this class.—First, and silver medal, Bern Coyne; second, Joseph Wilson.

Best brougham horse or gelding.—H. J. O'Neill.

OFFICERS' CHARGERS.

First prize, gold medal, Colonel C. C. Shute, 4th Drag Guards; second, silver medal, Captain Temple Godman, Dragoon Guards.

PONIES.

Best pony from 12 to 14 hands.—First prize, Arthur Brow second, John H. C. Wynne.

Best pony under 12 hands.—First prize and silver me having most merit, Rodney Purdon; second, Francis Ch well. Silver medal, as smallest pony exhibited, Thomas Adams.

BROOD MARES.

Best mare, thorough-bred, being in foal, or having produ a foal in 1865 or 1866.—First prize, £20, Captain Walter Nugent; second, £10, Earl of Howth. Highly commend Captain Daniel Bayley.

Best mare calculated to produce weight-carrying hunt being in foal, or having produced a foal in 1865 or 186 First prize, £15, James Lambert; second, £7, Stawell Garn

Best thorough-bred colt, not exceeding two years ol First, £15, and second, £10, Allan M'Donogh.

Best thorough-bred filly, not exceeding two years ol First prize, £15, Captain Daniel Bayley; second, £10, Patterson.

Best agricultural stallion, over three years old.—First £25, Patrick Mooney; second, £15, John M'Court. Hig commended: Thomas Lindsay.

Best agricultural stallion, three years old.—Commend Lord James Butler.

Best gelding for agricultural purposes, three years ol First prize, £7, Patrick Mooney.

Best filly, for agricultural purposes, three years old.—F prize, £7, James Butter; second, £4, Lord Clermont. Hig commended: Andrew Hope.

Best agricultural brood mare, in foal, or having produc foal in 1865 or 1866.—First prize, £15, James Waldie; cond, £7 10s., Edward Ramsbottam. Highly commend James Moffatt and Wellesley Prendergast. Commend Thomas Franks.—The Judges were Lord Combermere, Dunne, Capt. Archdall, Lord Crofton, Sir John Power, Beatie, Mr. Sheppard, Mr. J. Kilbie, the Hon. C. Crofton, Bernard, Lord James Butler, Mr. J. Lambert, Col. Bal Hillier, and Capt. Dunne, Mr. S. Garnett, Mr. Arthur Mr. Richard Chaloner, and Mr. Fetherton.—Abridged *Irish Farmers' Gazette.*

THE STEAM PLOUGH IN KINCARDINESHIRE.

TRIAL OF IMPLEMENTS.

Several of the leading farmers of Kincardineshire have formed a company on the limited liability principle for the purpose of introducing and fairly testing in its economic and practical aspect the system of cultivation by steam. The company made its first practical start on Thursday, Oct. 4, on the farm of Mr. Garland, Cairnton, Fordoun, and with very satisfactory results—with Mr. Greig as general manager. For the purposes of the company, the county has been divided into four districts. The trial at Cairnton commenced between nine and ten. Previously to that, the engines, which had been landed at Aberdeen, were worked out by their own motive power on the turnpike road all the way to Fordoun. Leaving Aberdeen on Tuesday afternoon, they reached Cairnton at a pretty late hour on Wednesday night. The scene of the trial was a large field of stubble, from which the crop of barley had all been removed. The soil is strong and al The ploughing, &c., began between nine and during a good part of the day, and there was present to witness the trial.

Readers who wish to have a knowledge Cairnton may fancy a 30-acre field, scribed, and jutting out to a consider south end, where the trial was going at each end of the rig, and as each steel hauling rope of the company engines is seen to be 400 yard plough was first put in operation iron frame set on two wheels, strength than ordinary cart w in the open furrow, the other lan"—representing so far his "lan" and "fur" horses. At ch end the iron frame skews off at one side to a point, and ch end carries four plough-heads—coulter, "sock," and ould board—ranging the one behind the other toward the treme point. Over the axle, in the centre, are screws for justing the draught (giving more or less "yird") and a iding rod, with a seat for the ploughmen at each end. As ch engine pulls the plough towards itself, it never requires be turned. When the end of the rig is reached, the part hich has been working is tilted up and the other end put wn, the signal is given, and steam is put on the engine at e opposite end, which forthwith begins to coil up its own pe, dragging the plough along, and unwinding the rope from e drum of the other engine, which is then free to shift along e top of the field a few yards as the work goes on. The ap that is in action passes over a series of "porters"—a all wheelbarrow-like affair, with a running pulley for the pe, and which are removed as the plough comes up to them.

As regards the action of the plough on Thursday, it would ave completely satisfied any intelligent farmer. While the rface of the ploughed land did not present that square "high tting," which our ploughmen are wont to "pride themselves" a in ploughing lea, it seemed to be just the very thing reuired in turning over stubbles. Four furrows, of course, ere done at once, and the depths varied from seven to ten ches. In virtue of a well-formed share (or "sock") with a od broad "feather," the bottom of the furrow was admirably ell loosened, and the furrow slice at same time well turned nd packed by the mould boards; and while the rate of speed as fully an acre ploughed per hour, the tillage was such that single furrow of like breadth and depth in such strong soil ould have been decidedly too much for a pair of the strongest horses.

About one o'clock the process of digging took the place of ploughing. This is effected by simply unscrewing the mould-boards of the plough, and putting on in their place a plate, which at the front sits close to the share like the ordinary mould-board, but, in place of presenting a shoulder to turn over the furrow, separates into two broad thick prongs, some two to three inches apart, the result being that while the soil is thoroughly well loosened in the bottom, the part raised as a furrow slice is broken up, even more effectually than it could be done with the spade. The operation of digging was universally admitted to be exceedingly satisfactory; in the case of land that is quite dry, and in want of a thorough shake up, it would leave nothing to be desired. It may be noted that, while digging, the implement was driven at the rate of 100 yards per minute, equivalent to digging fully an acre and a quarter per hour.

A round of the cultivator was tried simply to illustrate its working, which was found to be quite satisfactory, though, as its action is something like that of the ordinary grubber, the land was not properly in the state for bringing it into operation. The "Howe o' the Mearns," with its rich clay bottoms, affords a capital field for the operations, and we have no doubt that the advantages of the system will soon be generally appreciated.

The terms on which the company propose to work are these:

"Cultivating, 7 inches deep, 7s. per acre.
Do. 10 " 9s. "
Do. 12 " 10s. "

"Ploughing and digging, from 8s. to 12s. per acre.

"The working staff of the company will consist of three men and two boys, being a sufficient strength in ordinary circumstances; but the employer will have to provide any extra hands that the peculiarities of his field may render necessary; also coals and water, the company furnishing a water-cart, with pump, and 20 feet of suction pipe. The company's men will find their own board and lodging."—Abridged from the *Aberdeen Free Press.*

THE PARIS EXHIBITION OF 1867.

THE RURAL AND NATURAL HISTORY DEPARTMENTS.

The great decennial Exhibition in Paris next year will have an increased interest for the British farmer from the extended share which is to be given to raw products of agriculture and horticulture, the chase, alimentary substances, models of agricultural buildings, and live stock. Beyond an art and manufacturing exhibition, it will in fact comprise a great agricultural gathering, in which the nations of the world are invited to compete. Whether many of the distant countries will put in an appearance at this great competitive gathering, in response to the invitation of the French nation, the countries of Europe at least ought to do so; but we fear there will be a sad falling-off even there, for Austria and Prussia, Italy and Denmark, have been too much crippled by war to be very ready for industrial efforts of any great extent, individually or nationally.

France is evidently desirous of eliciting all the useful information relative to agriculture possible, and the direction of her efforts in this line have long been evident. Her central and provincial agricultural societies are doing much to stimulate improvement, and in many quarters both as to the character of her live stock and the introduction of the latest agricultural machinery there is marked progress. In 1860, under the auspices of the Imperial and Central Society of Agriculture of France, at the meeting in Paris, there was a very good collection of live stock and all kinds of domestic animals, agricultural implements, machines, utensils and apparatus used in husbandry, and various products of agriculture belonging to the Empire shows. A large number of gold, silver, and bronze medals, together with money prizes ranging from 700 to 1,000 francs were then awarded. Of this show a good account was subsequently published in a detailed volume, issued by order of the Minister of Agriculture, handsomely got up and illustrated with plates.

As the Paris Exhibition is to open a month earlier than the usual period at which these gatherings have commenced, the time is not very long for preparation by those who intend to take part. A brief abstract of the classification may, therefore, be useful to many under whose notice it may not hitherto have been brought. There is a marked contrast and great expansion in the arrangements of the forthcoming Exhibition as compared with the last Paris one. In 1855 there were but 8 groups of objects and 30 classes. Next year there will be 10 great groups and 95 classes. The general arrangement and classification have also been materially altered. Fine Arts, which then brought up the rear, are now promoted to the first group, or front rank. In 1855, Agriculture, Hunting, Shooting, and their products, were included in the first group: now they are transferred to the fifth group. Food substances, which were then included in one class, are now extended to seven classes.

As an International Exhibition that of next year will differ from all the preceding great Exhibitions in embracing live stock of all kinds, vegetables and forest trees, flowers and plants. To many these will prove of special attraction, and we shall endeavour to point out what is proposed to be done in this direction. A passing survey of the classes interesting to the agriculturist will best accomplish this object. The first to be noticed is

"Class 41.—Products of the Cultivation of Forests, and of the Trades appertaining thereto."—This is to include specimens of different kinds of trees. Wood for cabinet-work, and for building purposes. Fire-wood. Timber for shipbuilding; staves; cleft timber shingles. Cork;

bark for textile purposes. Tanning, colouring, odoriferous, resinous substances. Products obtained from forests: charcoal and dried wood; raw potash; turnery; basket-work; straw-work, and wooden shoes.

"Class 42.—Products of shooting, fishing, and of the gathering of fruits obtained without cultivation," includes collections and drawings of terrestrial and amphibious animals, of birds, eggs, fish, of cetacea, of mollusca, and of crustacea. Products of shooting: furs and skins, hair, bristles, feathers, down; horn, teeth, ivory, bone, and analogous products. Products of fishing: train oil and spermaceti; whalebone; ambergris; shells of mollusca, pearls, mother of pearl, sepia, purple; coral, sponge. Vegetable products of the earth obtained without culture: mushrooms, truffles, wild fruit, lichens used as dyes, food and fodder; fermented sap; Peruvian bark; useful barks and filaments; wax, resinous gums; india-rubber and gutta-percha.

"Class 43.—Agricultural products (not used as food) easily preserved."—Textile materials; raw cotton, flax and hemp scutched and unscutched, textile vegetable fibres of all kinds; wool in its grease; cocoons of the silkworm. Various agricultural products used in manufactures, in pharmacy, and for household purposes; oleaginous plants; oils, wax, resin. Tobacco. German tinder. Tanning substances. Dyeing substances. Preserved fodder.

"Class 48.—Agricultural apparatus and processes used in the cultivation of fields and forests."—Plans of culture, distribution of crops, and management. Apparatus for agricultural works; drainage, irrigation. Plans and models of farm-buildings. Tools, implements, machines, and apparatus used in husbandry, sowing and planting, harvesting, preparation and preservation of crops. Carts and other rural means of transport. Locomotives and horse-gins. Manures, organic or mineral. Apparatus for the physical and chemical study of soils. Plans of different systems of replanting, managing, and cultivating forests. Apparatus used in the cultivation of forests, and in the trades appertaining thereto.

"Class 49.—Apparatus used in shooting, fishing-tackle, and implements used in gathering fruits obtained without culture."—Guns, traps, and shooting-apparatus and equipment. Fishing-lines and hooks. Harpoons. Nets. Fishing-tackle and bait. Apparatus and implements used in gathering products obtained without cultivation.

"Class 50.—Apparatus and processes used in agricultural works, and in works for the preparation of food."—Apparatus used in agricultural works; manufacture of artificial manures, of drain-pipes, dairies; apparatus used in making flour, fecula, starches, oils; apparatus used in breweries, distilleries, sugar-manufactories, and refineries; workshops for the dressing of textile materials, silkworm nurseries, &c. Apparatus used in the preparation of alimentary products, bread-making machinery, and mechanical ovens for bakers, instruments used in making pastry and confectionery. Apparatus for the manufacture of vermicelli and maccaroni. Machines for making ship-biscuits. Chocolate machines. Apparatus for roasting coffee.

The seventh group is devoted to food, fresh or prepared, in various states of preparation, in which there are seven classes (67 to 73).

"Class 67.—Cereals and other eatable farinaceous products, and the products derived from them," includes wheat, rye, barley, rice, maize, millet, and other cereals in grain and in flour; grain without husk and groats; fecula from potatoes, rice, lentils, &c.; gluten, tapioca, sago, arrowroot, cassava, and other fecula; compound farinaceous products; Italian pastes, semolina, vermicelli, maccaroni; alimentary preparations, as substitutes for bread, home-made paste.

"Class 68.—Bread and pastry."—Various kinds of bread, with or without yeast; fancy bread, and bread in shapes; compressed bread, for travelling, military campaigns; navy biscuits; pastry of various kinds peculiar to each country; gingerbread and dry cakes capable of being preserved.

"Class 69.—Fatty substances used as food, milk, and eggs."—Fatty substances and oils good for food, fresh and preserved milk, fresh and salt butter, cheese, eggs of all kinds.

"Class 70.—Meat and fish."—Fresh and salt meat of all kinds, meats preserved by various processes, meat and soup cakes, hams and prepared meats, poultry and game, fresh fish, salt fish, fish in barrels (cod, herrings, &c.), fish preserved in oil (sardines, tunny, &c.), crustacea and shell-fish, &c.

"Class 71.—Vegetables and fruit."—Tubers (potatoes, &c.), dry farinaceous vegetables (beans and lentils), green vegetables for cooking (cabbages, &c.), vegetable roots (carrots, turnips, &c.), vegetables used for flavouring (onions, garlic, &c.), salads, cucumbers, gourds (pumpkins, melons, &c.), vegetables preserved in salt, vinegar, or by acetic fermentation (saur-krout, &c.), vegetables preserved by various methods, fresh fruit, dried and prepared fruits (prunes, figs, raisins, &c.), fruits preserved without sugar.

"Class 72.—Condiments and stimulants: sugar and confectionery."—Spices (pepper, cinnamon, and allspice), table salt, vinegar, compound condiments and stimulants (mustard, kari, English sauces, &c.); tea, coffee, and other aromatic beverages; chicory and sweet acorn coffee, chocolate, sugar for household purposes (grape sugar, sugar of milk), confectionery (sugar-plums, bonbons, &c.), jellies and preserves, dried and preserved fruits, cedrats, citrons, oranges, pine-apples, fruits preserved in brandy, syrups and liqueurs.

"Class 73.—Fermented drinks."—Vin ordinaire, white and red; sweet wines and still wines; sparkling wines; cider, perry, and other beverages made from fruits; beer, and other beverages made from cereals; fermented drinks made from vegetable sap, from milk, and sweet substances of all kinds; brandies and alcohols; spirits (gin, rum, tafia, kirsch, &c.)

But the eighth group, as respects an international exhibition, is the most novel and extensive; for while we have had partial shows of live-stock in various countries, there has never been such an opportunity afforded for gathering all the best representatives of animals from Europe, Asia, Africa, and America. This eighth group, besides having specimens of agricultural buildings of various countries, will comprise a cattle-show, a horse-show, with sheep, goats, pigs, rabbits, and other domestic animals; and will include a poultry-show and a dog-show. Even our dependence upon useful insects is not overlooked, and bees and silkworms, and the cocci producing cochineal, lac vermis, are to be shown. Here is the classification of this large group, and who will deny that there will be ample objects for study in such a wide international range?

"Class 74.—Farm-buildings and agricultural works." —Examples of the farm-buildings of various countries. Utensils used in the stable, cattle-shed, kennel, &c. Apparatus for preparing the food of domestic animals. Agricultural machinery in motion: steam ploughs, reaping and mowing machines, haymaking machines, and thrashing machines. Distilleries, sugar mills, sugar refineries, breweries, works for the preparation of flour, fecula, starch; silkworm nurseries. Presses for wine, cider, and oil.

"Class 75.—Horses, asses, mules."—Animals exhibited as characteristice specimens of the breeds of each country. Specimens of stabling.

"Class 76.—Bulls, buffaloes."—Animals exhibited as characteristic specimens of the breeds of each country. Specimens of cattle-sheds.

"Class 77.—Sheep, goats."—Animals exhibited as characteristic specimens of the breeds of each country. Examples of sheep-folds, and sheep-walks.

"Class 78.—Pigs, rabbits."—Animals exhibited as characteristic specimens of the breeds of each country. Examples of pig-sties, and of premises suitable to the rearing of animals of this class.

"Class 79.—Poultry."—Animals exhibited as characteristic specimens of the breeds of each country. Examples of poultry-houses, pigeon-houses, and pheasantries. Apparatus for artificial hatching.

"Class 80.—Sporting dogs and watch dogs."—Shepherds' dogs, watch dogs, sporting dogs. Examples of kennels, and apparatus used in training.

"Class 81.—Useful insects."—Bees, silkworms, and other kinds of bombyx. Cochineal, insects producing shell lac, &c. Apparatus used in the culture of bees and silkworms.

CALENDAR OF AGRICULTURE.

All crops being now secured, the attention of the farmer is directed to the manufactory and disposal of these crops, and to the preparation required for those of the ensuing year. Thrash grain constantly by flail, and once or twice a week by machinery, which will afford fresh provender for the cattle, and for being cut into chaff. Sell and deliver all grain as thrashed: placed in granaries, both quantity and quality is lost, an expense incurred in turning over the heaps, and a smell is contracted, money or capital lies dormant, and performs no activity. Money must be circulated, as stagnant water turns no machinery. Granary on a farm is useful in holding horses' food, as oats and seed grain, wool for a time, but no further.

Finish the sowing of wheat, if any remains unfinished from last month. Continue draining on grass land, and cut the drains half the depth on fallow lands, to be finished in dry seasons.

Attend to the feeding of cattle in the yards, and of sheep in the field; litter the yards frequently and thinly; on wet lands carry the turnips, roots cut off, to a dry field of ley or stubble, and spread them over the surface.

Feed pigs with raw and steamed food, potatoes and beet in troughs, steamed and mashed with meals. Place young horses in a yard with a shed, two or three together, and give tender foods, as potatoes, grains, and bran. The first winter's treatment makes or spoils animals of all kinds. Carrots raw or steamed are good for horses. The calves of this year require a kind treatment in a dry and warm bed, an ample and regular foddering, and constant supply of fresh water.

Lay dung and composts on grass lands and meadows, and flood watered grounds.

Begin to cut underwoods and forest trees; plant all arborescent plants; make new hedges, and repair old ones; mend roads, scour ditches, and gather dung of all kinds.

In fine weather fallow the land for the early green crops as long as the weather permits.

Begin to stubble for next year, deeply in seven or eight inches.

Feed poultry with light grain and steamed potatoes in troughs under a shed, in the poultry yard. These animals, though reckoned insignificant, repay attention equally with other live stock.

CALENDAR OF GARDENING.

Kitchen Garden.

Artichokes: Protect the plants by mulch or masses of leaves, after removing all the old stalks or decayed foliage. Dig for a temporary supply of the so-called Jerusalem artichoke. Store all the potatoes, carefully observing the condition of soundness or decay. Keep the store very dry.

Brocoli and cauliflower in the open ground should be laid down, and be guarded with a covering dry earth laid close over the stems.

Carrots: Dig and store, also beetroot, and some parsnips.

Celery: Finish earthing; if frost threaten, cover the ridge and tops with dry haulm.

Endive: Tie up some plants, and remove others to dry frames, for bleeching.

Lettuce in frames give air to, occasionally. Do the same by radish and salads,

Fruit Department.

Wall trees and berry-bearing shrubs may be pruned just now, but as well in February. Raspberries may be tied by cords neatly to the stakes, six rods to each, stopping at an angle towards the north. Full exposure to the sun is beneficial beyond the common perpendicular crowding.

Flower Garden.

Tulips, hyacinths, &c.: Plant in rich warm beds; open the holes neatly; place the bulb an inch or two deep among sand, carefully pressed around the lower bulb. Move herbaceous plants, roughly-fork the surface of beds, and scatter decayed leaf-mould and cow-dung over the surface. Observe neatness and order everywhere.

Semi-hardy plants are kept dry in pits and frames, with sawpit dust and ashes occasionly,

THE LATE MR. FISHER HOBBS.

After the burial, which noticeably enough was within a few yards of the place of his birth, at White Colne, the will of Mr. Fisher Hobbs was read in the presence of a number of relatives and friends who attended the funeral on Thursday Oct. 18. The great bulk of his property goes to his cousin, Mr. William Hobbs, of Selinge, near Hythe, with reversion of the landed estate to another cousin, Mr. Henry Hobbs, a brother of Mr. William Hobbs, and also a native of Kent. Annuities are left to the two sisters and the housekeeper of the deceased. and small legacies to distant relatives and god-children. To his two trustees, Messrs. J. T. Hallum and H. Trethewy, he gives £250 each; to the Royal Agricultural Benevolent Institution the sum of £500; to the Colchester Hospital £100; and to the Essex Idiot Asylum £100. To Messrs. Hall Dare, Brandreth Gibbs, and Henry Corbet, as the official representatives of the three national Agricultural Institutions, he directs the payment of legacies of £100 each; and to another friend, M. de Trehonnais, he leaves the selection of any works from his agricultural library. Mr. Hobbs, it may be added, had neither brother nor nephew.

The following is from a biographical sketch in the *Revue Agricole*, published some years since:—

At the age of twenty-two years, Mr. Hobbs' friends considering him qualified to conduct a business for himself, took for him the farm of Marks-hall in the parish of Coggeshall, in Essex, containing nearly 500 acres, chiefly grazing land, which afforded him ample scope for the exercise of the knowledge he had acquired. At the first meeting of the Royal Agricultural Society, at Oxford, Mr. Hobbs took the first prize for cereals, and after that time the grain raised on his farm was always in request, as well for seed with the farmers as with the miller and merchant. His success at Oxford encouraged him to persevere in the improvement of all kinds of grain and roots cultivated in the district; for which purpose he offered a bonus of 1s. to his harvestmen for every ear of wheat containing at least 100 grains. On one occasion a workman brought him six ears containing an average of 107 grains each. These he sowed separately, and found that not only were the best ears the most prolific and produced the largest ears, but that the largest grains and the best formed also yielded the strongest and best products. In 1855 Mr. Hobbs was nominated a delegate from the Royal Agricultural Society to the Universal Exhibition at Paris. The following year he formed part of the jury at the Great Exhibition of the Palace of Industry; and in 1857 of that of the famous International Show at Poissy. Mr. Hobbs was honoured with the friendship and respect of men of the first rank in society; among others, that of Lord Western, one of the contemporaries of Coke and the Duke of Bedford, and one of the most skilful agriculturists of that school. It was through the former nobleman's means that he was enabled to raise that remarkable breed of pigs for which he and the county of Essex are so famous. In a journey in Italy, Lord Western was struck with the cubic conformation and smallness of bone of the porcine race in the neighbourhood of Naples. Carefully selecting the finest boar he could find, he brought it with him to England. This he crossed with the black sows of Essex, which fully answered the expectation of Lord Western, the product possessing the same smallness of bone and great aptitude to fatten. Unfortunately, the improvement was confined to the male progeny of the cross, the series of organs constituted by the females, especially the digestive arrangements, still remaining defective in the production of flesh; so that, for want of assimilating power sufficient to counterbalance this aptitude to lay on fat, which they inherited from the male parent, they turned all into lard and formed no flesh. This defect Mr. Hobbs undertook to correct in the following manner. Instead of crossing the Neapolitan boar with the narrow-chested sows of the Essex breed, he selected his females from the Essex-Berkshire sub-race—that is to say, a breed produced by a cross of an Essex boar with a Berkshire sow. The influence of the Essex boar had prevailed as to colour, which still remained black; but the Berkshire element was manifested in the amplitude of the pectoral cavity, and consequently in the development of the viscera it contained. The large lungs, the deep and easy breathing of the animals of this cross, caused naturally a greater combustion of carbon, and thus a smaller assimilation of the adipose parts of the food. On the other hand, their digestive organs being more powerful, allowed them to assimilate the azoteous portions in a more complete manner; so that these animals produced more flesh than fat. It was by coupling these two elements, namely, the Naples-Essex cross, so remarkable for its fineness of bone and aptitude to fatten, with the Essex-Berkshire which Mr. Fisher Hobbs found in two neighbouring piggeries, that he eventually and permanently established, in a new breed that bears his name, the union of these two valuable qualities, the fortunate combination of which has rendered this breed so estimable with the breeders.

In 1844, Mr. Fisher Hobbs' uncle died. It was unfortunate that, on the same day, Mr. Hobbs had invited a large party of agriculturists to dine at Marks-hall, to do honour to Mr. Smith, of Deanston, who had engaged to come and explain his system of drainage. In the midst of the dinner a messenger arrived, covered with dust and perspiration, to announce to Mr. Hobbs that Mr. Fisher was at the point of death, and wished to see him before he died. Excusing himself to his guests, he arrived in time to close the eyes of his benefactor. He left Marks-hall a simple farmer, and a few days after returned a rich man, his uncle having named him his heir and only legatee.

The new position of Mr. Hobbs made no difference in the predilections and pursuits of his life. In becoming a rich landowner, he remained a farmer; and the estate of Boxted Lodge is still one of the best cultivated in the country, nothing being neglected, even to the hedges, which are kept neatly clipped and cleared from parasitic plants, giving the inclosures the appearance of gardens. It was in the transformation of this property that Mr. Hobbs displayed his deep science as a practical farmer. Up to the period of his taking it in hand, it had been neglected and unproductive. The light land wanted consistence; the heavy lands were soddened with water; the bottoms of the ravines were turf-bogs impervious to man or horse. The estate was divided into innumerable inclosures by high hedges, and a ditch on each side to carry off the water; whilst thickets occupied a large space that should have been devoted to the plough. All the farm buildings were in ruins; and disorder and sterility prevailed throughout. Soon everything was changed. The peat-bogs were converted into fertile meadows, the old hedges disappeared, the ditches were filled up and the land drained, the springs opened and utilized, the sandy soils solidified, excellent farm buildings erected where the old ones stood, the small inclosures converted into large rectangular fields, the mansion, the gardens, the homestead—all have been transformed; and the Boxted estate is now one of the best-managed properties of its size in the kingdom.

We close this sketch of the life of Fisher Hobbs with the following trait, which exhibits at once his benevolence and his discernment. At the time of the repeal of the corn laws, all his neighbours were struck with stupor under the apprehension of certain ruin. They dismissed their house-servants and labourers, who, having no employment, went in crowds to the union-houses, to the great increase of the parish burthens. What course did Fisher Hobbs pursue? He assembled those unfortunate labourers destitute of bread or work, whom the senseless inhumanity of the farmers had abandoned to starvation, and set them to work to clear and cut down a large wood on his estate. His neighbours thought him mad, for they were all reducing, rather than increasing, the area of their arable land. Scarcely had he finished his undertaking, when they recovered from their panic, and again took on their labourers. The land cleared by these unfortunate men is called to this day "The Free-trade Close," and is one of the most productive in the country. Mr. Hobbs sowed it with wheat every second year, and always obtained large crops. In other respects, he generally practised a biennial course at Boxted—the reverse of the Norfolk husbandry.

FOREIGN AGRICULTURAL GOSSIP.

The present month has opened gloomily for French agriculture. The continual rains of August and September rendered the securing of the crops of cereals, potatoes, and beet root a matter of great difficulty. They also deteriorated the quality of the grapes and all the later fruits. Many lands saturated with humidity were also rendered quite unfit for autumn tillage. To all these causes of agricultural depression must be added the terrible inundation, which has ravaged the valleys of the Seine and the Loire, as well as their principal affluents. Savoy has been severely affected by the same adverse influence, while the south has also suffered a good deal, particularly in the valleys of the Lot and the Dordogne. Embankments broken by a sudden and unusual flood; railways, roads, and bridges carried away; villages literally engulphed in the flood waters; cattle, stacks of grain, timber, &c., whirled away in the torrents; lands covered with sterile sands; unhappy populations driven from their dwellings, and seeking an asylum in towns themselves partially inundated—such have been the startling facts, the narration of which fills the columns of all the French journals. There is one bright side to the sad picture. The ready succour afforded; the precautionary measures taken by all the authorities to mitigate the evil, when it was impossible to altogether prevent it; the personal devotion displayed by individuals—these are such as have been recorded on previous occasions of the same sad character. Evrrywhere we witness the organization of means of safety, temporary provision of lodgings, subscriptions for the *inondés*. The misfortunes sustained have been severe; the sentiments which appreciate them and the acts which seek to lessen their sad effects will not fall below the gravity of the situation. All France will endeavour to come to the aid of the victims of the inundation, and once more public and official attention will be devoted to the means best adapted to prevent a recurrence of such calamities.—The various agricultural committees and societies of France are preoccupying themselves more and more with the official inquiry about to be instituted into the state of French agriculture. The Baron de Veancé, in addressing the committee of St. Pourcain, in the Allier, specially called the attention of his auditors to the comparative position of landed and share property. Everything, he said, has marched on rapidly with moveable values, new laws having been passed for societies of credit in all forms. The new laws with reference to moveable values also relieve them from all the charges which still weigh on landed property. On the other hand, said the Baron, we have the grave fact that for the last 70 years the laws relating to the position of agriculture and of rural property have remained the same. Reverting to the agricultural committee of Wassy, in the Haute-Marne, M. Dannaelle-Bernardin, president of the committee, observed: "Let them stop the metallic current which carries our money to foreign countries to which it is attracted by the lust for heavy interests, too often of an illusory character; let them restrict the spirit of speculation which enervates both the financial force of the country and the public mind; let them slacken to a just extent the works on hand in the great towns, and then they will be enabled to develope in the departements the third and fourth networks of railways and to dig the canals promised when the *régime* of commercial liberty was inaugurated. This would be a certain means of spreading much money over the rural districts and would secure such an increased amount of ease to agriculturists as would enable them to maintain wages at a high rate and promote the general well-being of the working-classes. By this means also a numerous body of workpeople would be brought back to their villages, who would willingly resume the plough or the sickle whenever the labours of the fields required their co-operation." At the Chaumont committee, in the Haute-Marne, M. Bontemps de Montreuil, in devoting his attention to the means of securing an equality in public charges, said: "These means are contained in this short proposition—revise the tax on moveable values and the charges on land, so as to put them both on the same level. By this means a nearer approach would be made to the principle of equality in taxation, and public opinion would be satisfied, the treasury would have the same resources, the great fortunes composed of farms and financial values would recover on one side what they lost on the other, and agriculture, less heavily burthened, would advance more rapidly on the path of improvement." At the Blaye committee, which assembled at Saint Savin, the Marquis de la Grange, senator, more particularly devoted his attention to the question of the duties levied on beverages. A certain number of committees, that of the arrondissement of Maçon among others, directed attention to the subject of agricultural instruction; and M. de Parseval, Grand-maison, delivered on this head a speech in which he indicated the object and the principal means of the new course of instruction which the Minister of Public Instruction has just founded at Cluny. The Charolles committee has also been favoured with a speech by M. Bouthier de Latour, director of the Montceau farm-school. We append a passage in which the speaker referred to the best means of running off the surplus cereal production of the empire: "Two means present themselves—exportation and augmentation in the consumption. The first will be the most simple and the most advantageous when our neighbours have requirements to satisfy, and when a sufficiently high price is paid for our grain. The second will be preferable in the contrary case. All cultivators, breeders, and graziers know now that when cereals are at a low rate animals may consume advantageously oats, barley, rye, and even ordinary wheat. In years of abundance it would perhaps be also economical to reserve for the consumption of man only the pure flour of wheat, and to keep the bran and other products for animals. It will be readily understood that the abandonment of all these substances to cattle would increase in a considerable degree the total consumption, and that the greater part of the secondary products might in years of scarcity increase very conveniently the food supplies of the human race." At the Moncoutant agricultural committee, General Allard gave some advice with reference to the use and abuse of lime—advice which must have caused many of his auditors to reflect, as the application of lime is either a great benefit or a great evil. The argument of the General appears to have been that, although lime is productive of favourable results when its object is to develop a hitherto insufficient forage production, it exerts a disastrous influence on the future when an application is made of it in order to increase directly the production of cereals. A trial has been made on the latter head, and the application of lime has doubtless had something to do with the rapid increase in the grain crops of France—the production of wheat in that empire having risen, according to official statistics, from 75,000,000 hectolitres to 115,000,000 per annum. But General Allard appears to have warned his auditors against placing too much confidence in this "improvisation" of wheat; he especially urged them not to conclude that such crops result from seriously established improvements; and he argued that the honey-moon of first crops obtained from lime was like all honey-moons, in that it passed quickly away. The monthly agriculturists have begun to dine together again in France—that is, the monthly dinners of French agriculturists at Paris have been resumed. In the ordinary course of things, the resumption of the dinners would not have occurred until the last Wednesday in October; but it was deemed advisable, in consequence of the rapid progress impressed on the proceedings of the official *enquête* to advance by a month the period of the meetings. M. Payen, one of the first promoters of these pleasant dinners, presided at the first meeting for the season, 1866-7. M. Wolowski developed the thesis of commercial liberty with great elevation of views. Without seeking to prejudge the results of the *enquête*, the eminent economist appeared to be convinced that the legislation of 1861—for it was not until 1861 that a free-trade policy was acted on in France—had nothing to fear from a serious examination; and this he affirmed boldly, without fearing to pass for an enemy to agriculture. In the eyes of M. Wolowski, the real enemies of agriculture are not the partisans of commercial liberty; they are those who maintain cultivators in a chimerical terror of foreign importations, and who attribute the fall not only to the real importation, but to those mountains of cereals which might invade the French markets. French agriculturists, M. Wolowski argued, must learn to appreciate their own force and accept foreign competition as the best of all stimulants. It was not, he said, by establishing on the frontiers a system of protective duties that the return of crises could be prevented, but rather by improving the internal *régime*. M. Gustave Heuzé, in order to show the advantages of the legislation which came into force in France in 1861, compared this year's harvest with the harvest of sad memory which distinguished the year 1816. He said the harvests of 1816 and 1866 have certainly a great analogy, but it may perhaps be objected that no definitively fixed results have yet been arrived at as to the crops of 1866, so that what happened immediately after the application of the new *régime* may be regarded, perhaps, as more conclusive. The deficit of 1861 is considered to have been more considerable than that of 1816, and yet in that year wheat never exceeded in France 24s. per hectolitre (as nearly as possible three bushels English). The commercial world being able to make purchases of grain without fearing that our advance in prices during the voyage would increase the import duties, as frequently happened during the period of the sliding-scale, imported in fact with complete security a sufficient quantity of goods. It was from this circumstance, it is true, said M. Heuzé, that agriculture did not sell wheat at exorbitant rates, but it found a certain compensation in the maintenance of prices in 1863 and 1864; and it is evident that if the liberal *régime* of 1861 had not enabled commerce to make large exportations during that period of unprecedented abundance, and to sustain prices in consequence at an average of about 14s. per qr., wheat would have fallen during the two years in question to an unprecedentedly low point. If under the *régime* of the sliding-scale in 1829, 1833, and 1843, and from 1849 to 1853, with crops which did not attain an annual average of 90,000,000 hectolitres, prices fell to 10s. per hectolitre, where would they have stopped after the successive crops which produced together more than 220,000,000 hectolitres? M. Heuzé considered, then, that agriculture had derived conclusively-established advantages from the new legislation, and that if agriculturists appreciate their position and their true interests, those advantages will become more and more sensible. The development of an export trade will be an encouragement to produce more and at a cheaper rate. Before a legislation keeping the ports open, and applying the spur to competition, routine, M. Heuzé thinks, will disappear, and farmers will be enabled to produce more and better. The new *régime* will be also favourable to the consumer, whose interests must not be forgotten, and who will be assured by it a perfect security. Without anticipating the results of the official *enquête*, which will present numerous and often contradictory projects, ideas, and remedies, M. Heuzé considers that there is one point upon which all parties are likely to be agreed—viz., that it is necessary to produce as much as possible. But then it becomes necessary to seek and assure outlets through which to run off the surplus productions of France, which appear to occupy a position especially favourable to the promotion and attainment of this object. Thus France is surrounded by needy neighbours; Belgium, Holland, Germany, Italy, and a part of Prussia have often insufficient crops; and Switzerland and England never produce enough. England alone, M. Heuzé calculated, has to import annually 20,000,000 to 30,000,000 hectolitres, which she has to seek from a distance, instead of taking them from the French, who are at her very door. Why is this? M. Heuzé asked. The cause is very simple—permanent wants are required, and markets always in a state to satisfy them; but in France the harvests are alternately superabundant or deficient; and the English, not being able to rely at all times upon France, have established in the Black Sea, the Baltic, and the United States agencies and means of transport, by the aid of which they can at all times assure regular supplies. This is the reason, according to M. Heuzé, why, notwithstanding the superiority of French wheat and flour, and the advantages which French quotations often present, France has furnished to England—until the present year, we should remark—only relatively small quantities of the products of her fields. This state of affairs, which M. Heuzé considers highly prejudicial to French agriculture, will, he expects, experience a great change when the price of the wheat enables France to compete in that regard with Prussia and Russia, and when a trade in grain exists in France on a large scale, as commerce can alone create warehouses and depôts capable of responding to the wants of neighbouring countries, and maintaining outlets bearing a due ratio to production. To render commerce sufficiently powerful to fulfil such a mission, M. Heuzé argued that it requires the greatest security and the most entire liberty, two matters in which it is still deficient. Ignorance and passion have in all ages excited prejudices against grain merchants and millers, who are exposed to great perils in moments of scarcity and dearness; and M. Heuzé contended that articles 419 and 420 of the Penal Code (which he regarded as based on the prejudices in question) should be abrogated, since so long as they existed the grain trade would not develop itself in France, as no one dare operate on an extensive scale in the presence of a legislation which daily exposed him to the risk of defending his fortune, his liberty, and even his honour. It is impossible, in the opinion of M. Heuzé, to determine the limits of legal profits, and to fix the commencement of cupidity, while the articles 419 and 420 of the Penal Code expose the French grain merchant under certain circumstances to restitution, imprisonment, and the surveillance of the police for a period of ten years. Some persons, little versed in economic science, fear that perfect freedom in the French grain trade would be attended with abuses; but M. Heuzé pronounces their fears chimerical, and to support his assertion he appeals to England. In England, he says, the grain trade has been entirely free since 1846; nevertheless, notwithstanding incessant and considerable requirements, supplies have never run short, and prices have never been excessive. Facilities of transport enable masses of cereals to be sent promptly on all the markets on which a little profit can be realized, and a fictitious advance can never continue long. It would be wise then, M. Heuzé contended, to remove as soon as possible the last traces of an epoch of ignorance and barbarism, if it is desired that the new legislation adopted in France should secure a beneficent agricultural and commercial transformation, and improve simultaneously the position of the proprietor, the farmer, and the consumer. France, M. Heuzé thinks, has been too long treated to half measures in economic matters. In 1861, the Government suppressed the sliding scale, maintaining only a fixed export duty; it desired, in fact, that the grain trade should be entirely free, but it left remaining a system of legislation which does not allow commerce to use its new liberty as it ought to do. This system, which consists in commencing great reforms without completing them by secondary measures which would assure their success, calls for the attention of all farmers who may be examined in connexion with the approaching *enquête*—at least so says M. Heuzé, who wants to see the legislation of France rendered in harmony with the *régime* inaugurated in 1861.—The *Journal d'Agriculture Pratique* gives an engraving of a Charolais beast which received a prize at the last show at Poissy. The animal in question was exhibited by M. Suif, of the Pavilion, about 2½ miles from Nevers; it belongs to the Charolais breed, or, to speak with more strict accuracy, to the Nivernais breed. It was exhibited this year at the Poissy show, where it obtained the second prize in the first category. At M. Suif's, as among all the breeders of the Nivernais, the animals remain in the pastures from April to October, so that the feeding of the beasts is exclusively derived from herbage during seven months of the year. It was thus that the beast which received a prize at Poissy was reared; it further passed five months in the shed, living on hay, lucern, and trefoil. It was not until October, 1865, that M. Suif began to fatten the animal, and then its daily ration was composed of beetroot mixed with barleymeal, with colza or linseed cakes. By adopting this *régime*, M. Suif obtained an animal which at the age of three years weighed nearly 19 cwt., and which weighed 18 cwt. 25 lbs. on its arrival at the Lyons exhibition of fat stock. At the Lyons show, the animal obtained the first prize of the first category and the prize of honour of the town. From Lyons it was sent to Poissy, and in its long journey it only lost 25 lbs., still weighing 18 cwt. when it reached Poissy. Less fortunate at Poissy than at Lyons, it was beaten by one of its Lyons competitors, and obtained only the second prize of the first series, the first having been awarded to a fine Durham entered by M. Tiersonnier, to which we may possibly make some future reference, as it took the "cup of honour" offered at Poissy. The struggle between the Durham and Charolais breeds excited much interest among agriculturists, as it proved that the Charolais breed very nearly possesses the aptitude for grazing which distinguish shorthorns. It testified also in favour of the cultivators of the Nièvre, who make themselves especially remarked by their efforts and their success in the breeding of stock. Thus, out of 17 specimens of the bovine race presented at Poissy by exhibitors of the Nièvre, 13 received premiums. Among these premiums were 6 first-class and 4 second-class prizes, so that the results obtained by Nièvre breeders scarcely leave anything to be desired. M. Suif has devoted his attention for 22 years to the breeding of cattle; but it was only in 1861 that he came out as a public exhibitor.—In connexion with the Paris Universal Exhibition of 1867 it may be observed that the imperial commission has selected a trial-field on which it is intended to show in activity the implements now ordinarily in use on farms. The site selected is Ile de Billancourt, situated at a small distance from the Champ de Mars, and which presents on an area of 44 acres a soil of average consistency.

LIFFORD ESTATE FARMING SOCIETY.

This society, which is composed of the tenantry on the County Donegal estate of the Earl of Erne,* has just held its thirteenth annual show of cattle, agricultural implements, and farm produce near the village of Ballindrait, about two miles from Lifford. The estate comprises about 4,000 acres, and contains a fair proportion of as fine land as may be found in the north west district. A good deal of it is also mountainous, the celebrated Croghan Hill rising to a considerable altitude. In passing through the estate the visitor is much struck with the neatness and uniform cleanliness of the houses, from those of the wealthy farmer to the humblest cottier—a result mainly owing to the example and instruction of Lord Erne, conveyed through his agent and agriculturist. There was a large attendance of the tenantry, who evidently viewed the proceedings with the keenest interest. Lord Erne, accompanied by his eldest son, visited the exhibition. Silver medals were granted to George M'Beth, Alexander Weir, and James Harkin, they being the best exhibitors of stock at last year's show. The winners this year are. A. M'Beth, Joseph Smith, and James Harkin.

Lord **Erne** addressed the tenants, and congratulated them on the show, the best they had ever held. He next alluded to the importance of such exhibitions—their good effects on the country in keeping alive a spirit of emulation, and spoke of the gratitude to God which should move them all at the absence of the cattle plague from the country. He was glad to find the stock shown, especially the young stock, so very much over the condition of that shown in former years. With respect to the state of the property he had also reason to be satisfied. Years ago he had established an estate court for the redressing of any wrongs which the tenants had reason to complain of; but this year he found there were only two complaints—he was wrong—they were not complaints, but requests—one for a lease, the other for assistance in making repairs. The first he would grant, the second refuse, inasmuch as the applicant had himself carried out the repairs without consulting the agent. But perhaps the greatest cause for congratulation among them all was to be found in the fact that in the year ending in June last, there was not one penny of rent unpaid. Let them all hope that this may long continue. Lord Erne then complimented the tenants on the good order, cleanliness, and neatness of their houses. He did not know any other tenantry which surpassed them for cleanliness, good order, and good farming. But still they must push forward, and avail themselves of the best implements of husbandry. He had himself sent to their show a Wood's reaper, drawn by a single horse, which his agent told him would cut nine acres of oats daily. He was glad to find they had now three flax-mills on the estate and between thirty and forty thrashing-mills. With respect to the labourers on the estate, he advised the farmers to pay them well, and look after their condition, by providing and keeping up comfortable cottages, and allowing their cottiers to go home on wet days in the slack season to effect little improvements about their homes. His lordship next advised the labourers to stock their gardens with good vegetables, to keep bees, and rear poultry. He gave instances of labourers on his Fermanagh estate realizing from £12 to £15 or £16 yearly from these sources, and they could be looked after by their wives or children. By way of ascertaining what progress the estate had been making, he had asked Mr. Weir to draw up a statement, which, he thought, would surprise them, as it had certainly astonished himself.

Mr Weir then read a report, of which the following is the substance. Mr. Weir stated that, thirty years ago, when he was appointed agriculturist, the estate was broken up into small fields, surrounded by large and irregular fences. No regular or systematic rotation crops was carried on, or even attempted. The cattle kept by the farmers were of a poor, stunted class. There were but few iron ploughs on the estate, and all the other implements in use were of a very primitive description. There was but one thrashing machine on the property, while some portions of the estate were nearly inaccessible, owing to the want of proper roads. All this was now, however, changed for the better, of which an idea could be gathered from the following items of expenditure, the amounts being, if anything, understated: 120,000 perches of drains, £4,000; 500 acres subsoiled, £1,500; 20,000 perches of old fences levelled, £500; 10,000 of new fences made, £500; 2,000 perches of new roads made, £500; stones sunk and cleared off, and other land improvements, £250; embankments, £500; iron gates for fields, &c., £250; new buildings on the estate, £14,000; machinery and improved implements for cultivation, £2,000; three steam engines, £1,000—total, £25,000. All these improvements had been carried out at the joint expense of Lord Erne and his tenantry in about equal proportions.

Lord Erne said this was a very gratifying statement, and hoped it would stimulate them all to higher exertions in the good work of improving the country in which they lived.

SALE OF SHORTHORNS AT BALLYWATER, CORK.

On Thursday, Oct. 11, Mr. Marsh, of Cork, sold by auction seventeen bull calves and six two-year-old heifers, the property of Mr. Richard Welsted. The following were the prices realized:

BULL CALVES.

Roan Chief, roan, calved October 6, 1865; got by Mountain Chief (20,383): purchased by Mr. Reardon, Ballincollig, Cork, for 32 guineas.

Sir Simon, red, calved December 15, 1865; got by Sir James (16,980): Mr. Roche, Annakisney, Mallow, 20 guineas.

Red Ned, red, calved November 23, 1865; got by Uncle Ned (19,026): Mr. Evans, Carker, Doneraile, 15 guineas.

King James, white, calved January 5, 1866; got by Sir James (16,980): Mr. Hewson, Errismore, Listowel, 22 guineas.

Ned, roan, calved January 10, 1866; got by Uncle Ned (19,062): Captain Smith Barry, Ballyedmond, Midleton, 43 guineas.

Twin Brother to Ned, roan, calved January 10, 1866; got by Uncle Ned (19,026): the Hon. Moore Smith, Ballinatray, Youghal, 36 guineas.

Sir Edwin, red and white, calved January 10, 1866; got by Sir James (16,980): Major Barry, Castlecor, Buttevant, 39 guineas.

Royal James, white, calved January 14, 1866; got by Sir James (16,980): Professor Baldwin, Glasnevin, Dublin, 24 guineas.

Woodcraft, roan, calved January 22, 1866; got by Sir James (16,980): Mr. Law, Kilshane, Tipperary, 56 guineas.

Uncle Fred, red and white, calved January 23, 1866; got by Uncle Ned (19,062): Mr. Marmion, Skibbereen, 23 gs.

Sir Francis, roan, calved January 27, 1866; got by Sir James (16,980): Mr. Taffe, Miltown, County Roscommon, 24 gs.

Merlin, roan, calved February 12, 1866; got by Sir James (16,980); Captain Leader, Mount Leader, Millstreet, 27 gs.

Jovial, red and white, calved March 5, 1866; got by Sir James (16,980): Major Barry, Castlecor, Buttevant, 41 gs.

Sir Charles, roan, calved March 21, 1866; got by Sir James (16,980): Mr. Byrne, Wallstown, Shanballymore, 26 gs.

Robin Hood, red, calved April 22, 1866; got by Uncle Ned (19,026): Mr. Hewson, Errismore, 10 gs.

Esca, red, calved May 6, 1866; got by Uncle Ned (19,026): C. W. Massy Granstown, Tipperary, 32 gs.

Coxcomb, roan, calved May 17, 1866; got by Sir James (16,980): R. W. Bayly, Dundrum, 28 gs.

HEIFERS.

Olivia 5th, roan, calved October 22, 1863; got by Bridegroom (17,443): Captain Bury, Little Island, Cork, 25 gs.

Favourite 3rd, red and white, calved December 6, 1863; got by Prince Regent (18,637): Major Barry, Castlecor, Buttevant, 24 gs.

Sophy 5th, red, calved January 31, 1864; got by Elfin King (17,796): same, 35 gs.

Sophy 6th, white, calved February 24, 1864; got by Elfin King (17,796): same, 31 gs.

Olivia 6th, roan, calved March 14, 1864; got by Elfin King (17,796): Captain Bury, Little Island, Cork, 32 gs.

Annie 3rd, roan, calved June 7, 1864; got by Ethelred (19,709): Major Barry, Castlecor, Buttevant, 37 gs.

The bull-calves averaged 29½ guineas, and the heifers about 31 guineas.

AGRICULTURAL REPORTS.

BEDFORDSHIRE.

We have deferred our usual report at this season in the hope that we might announce the conclusion of the dreary and long-to-be-remembered harvest of 1866; but we still hear that corn is yet in the field. We think, however, with the present fine weather, that all will be secured during this week. Harvest commenced the first week in August on the forward soils, and was completed, in some instances, in little more than three weeks, just before the wet weather set in; these, we regret to say, were the exceptions; in most cases it lasted double the time, and in some few instances, as we have before stated, it is not yet completed. The wind of the 7th August did a great deal of damage to the forward wheat and barley, whipping it out and blowing off the ears. Some have estimated the loss at a quarter an acre, and, from the appearance of the fields, which are now green with it, we do not think it over-estimated. The wheat on the warm soils we believe to be an average crop, but not superior in quality. On clay-soils we consider it below an average, and only of moderate quality, and its condition will prevent much of it finding its way to market for some time to come. The same may be said pretty much of the barley crop, except that the quality on really barley soils is very fine. We have seen some for which considerably over 50s. per quarter could be obtained—the finest we have seen this year, or for some years past; but such will only come out in very small parcels: the bulk must be very inferior. The crop, particularly on heavy soils, was badly got-in in the spring, and has been, unfortunately, badly harvested. One word here about stacking and thatching. Very much damage has been done by the imperfect manner in which stacks have been built, and remaining unthatched. We may learn something in this county from our friends in the north, who are accustomed to a greater rainfall. In forming the roof of the stacks the middle is kept so full that the ears are uppermost, with the butt-end of the sheaves dropping at a sharp angle, so that the rain runs off. We have seen stacks thus built which remained unthatched during the greater part of the wet weather, and, to our astonishment, with very little damage done to them. We know it will be said there is nothing new in this style of building; if known, however, it is but seldom practised. In most instances you will see the sheaves the reverse of what has been stated, being conductors of the rain into the stack. We have thought it right to call attention to this matter, particularly as we have seen and heard of stacks being as green as a meadow. Men are rather averse to this plan, as it entails more trouble not only in the building but in the thatching. Beans and peas are an average crop, the latter, perhaps, above, and were generally harvested favourably. Oats are not much grown in this county; the report of the crop is, however, only moderate. There has been a large breadth of clover mown for seed, of which an indifferent account is given. Potatoes yield well, but are sadly diseased, and it is feared they will go on decaying in the pits. We have had too much rain and too little sun to be able to report favourably of the root crops: they fall far below, both in weight and quality, the crops of last year. If we get a fine October, the bulbs no doubt will improve. We can speak the most favourably of kohl rabi, which is now largely planted in this county, and is likely still to grow in the estimation of the stockmaster. The season has not proved so unsuitable to this root. We have seen large breadths of it, presenting a considerable weight of good, although perhaps not quite equal to last year. Wurzels are now being taken up on clay lands by some few who look ahead, and will be well carted off should the present weather continue. We cannot but think that many drive this work off too long: October is the month to secure the roots on wet clay soils. The young clovers have planted well, and present an abundance of feed. Keep, in fact, is everywhere plentiful; so that neither the roots nor the haystacks will be commenced upon so early as usual. Cattle will remain in the pastures for some time to come. It is with great satisfaction we have to report entire freedom from cattle plague. We have indeed been highly favoured, having perhaps suffered less than any other county from this dire disease. It is to be hoped that our stockmasters will not relax their preventive measures; for we may not yet be "out of the wood," but freely use disinfectants, and attend closely to the comfort and cleanliness of their animals. We can also give a satisfactory account of the sheep. We believe there is less disease among the lambs than is usual at this period of the year. Our flockmasters have found that the low-lying meadows on the banks of the Ouse are not suitable for lambs, especially to remain upon during the night, the surrounding atmosphere greatly accelerating fever and its attendant husk. If these animals are to be kept healthy, they must be treated generously, and not grazed in large numbers, nor kept too long in one place; change of keep being the one great thing for them. There will in all probability be more sheep bred this season in this county than for very many years past, many who had relinquished keeping a breeding flock having, as we think, very wisely started afresh. Autumnal cultivation, either by horses or steam, has of course been out of the question this season; the little we have seen done, both here and elsewhere, so far as cleaning the land is concerned, being all labour in vain. The improvement in the weather during the last few days has tempted those possessing steam tackle to renew their smashing operations; the land, however, moves very heavily, and will require an extra working to make it equal to one operation of ordinary years; the ridging-ploughs which generally follow will, however, rectify matters, exposing a large surface to the atmosphere, and laying the land dry during the winter. We are now busy preparing for wheat-sowing; indeed, some is already in the ground. The land, particularly after beans, "cuts up," and will require a few fine days succeeded by some rain before it can be worked satisfactorily. We do not think so great a breadth will be sown as usual: the price of barley will doubtless tempt many to plant that more largely. At Bedford, yesterday, was held the annual Agricultural Meeting for which this county has been celebrated for the last sixty-six years. In consequence of the cattle plague no show of stock was held. The proceedings were confined to the general ploughing-match, rewards to labourers, and a root and vegetable show for both masters and servants. There were some forty teams at the ploughing-match—a larger number than for some years past, and although the ploughing was excellent, yet for Bedfordshire we did not think it quite up to the mark. Among the number were seven farmers' sons and pupils competing for the cup. It augurs well for the future of Bedfordshire agriculture to see so many of the coming men thus engaged: they will find a practical knowledge of this important operation a great benefit, and, we may add, comfort to them when they come to the direction of affairs. We hope the committee of the Society will be induced to extend this branch of their proceedings, and hold a larger number of these really useful meetings at some of the outlying towns of the county. The general opinion is that Bedford is the most suitable place in every respect for holding every year the summer show of stock, and that it would be satisfactory to those towns which have occasionally received the Society, if such steps were taken as suggested above.—Oct. 11.

THE ISLE OF ELY.

The rainy reason is over, and with October we have finer weather and dusty roads, and this morning have had the first autumn frost. The harvest lingered on until nearly the end of September, and in some of the northern counties is scarcely yet completed. We hardly need say that during such a season much corn has been stacked in inferior condition, and is totally unfit for immediate use. A good deal, too, is sprouted, and would scarcely be saleable were it now offered on the market. But, bad as is our case, it is far better than that of many who farm in the later districts. The earlier the corn was matured, the better is the quality, and the better was it harvested. We find the opinions we expressed in our former report are being verified, and the yield is universally pronounced deficient. The few thick-standing crops that ripened early are turning out a full average; but those that were laid and later are yielding badly. The conclusion is therefore forced upon us that the wheat crop throughout this district, which early in July was so promising, and from which we expected such abundance, is below an average. We shall be glad to correct this statement, should subsequent facts warrant us in so doing. A late harvest implies a late wheat-seeding; and the autumn will doubtless be far advanced ere this operation is completed. Farmers are making all possible speed in the Fens to get their land prepared, and many have commenced sowing; but a great deal of land yet remains to be ploughed. On the strong lands very little can be done. The soil turns up very rough and unkind, and requires hard drying and rain to pulverize it, ere it will work satisfactorily. We have an abundance of grass-keeping—the natural consequence of eight weeks' showery weather. Stock are thriving well, except lambs, which, in some instances, are dying from scour, occasioned by the vigorous growth and unripe state of the grasses. Coleseeds are various, but generally not very good. Mangolds and kohl rabi will not be as heavy crops as last year: the want of a higher temperature has retarded the growth of the bulbs. The corn markets vary but little; fine wheats are a ready sale, and bring high prices; and secondary qualities retain their value. The attempts hitherto made to buy them cheaper have failed.—YOUR FEN REPORTER.—Oct. 15.

NORTHAMPTONSHIRE.

Oat-cutting began about the 1st of August, and wheat about the 7th in some places, when the wind did great damage in wiping out a deal of wheat and breaking off the ears of barley—some estimate one quarter per acre—and from the appearance of the fields the loss was immense. The wheat on deep rich soils we estimate nearly an average where sown thick enough: where thin on the ground it never filled, the spring being so ungenial: we never saw the scarty sower so beat on clay soils and thin weak land: a very light crop, and a deal of it badly harvested, and cannot be used for mealing purposes till after March, as a deal of the corn that was in stack was not covered, when on the 28th ult. more than 2½ inches of rain fell. We have seen 50s. made of a sample or two of barley; but, take the crop altogether, it will be far below an average in quantity and quality, as most of the best samples have gone to market. The system of pulling barns down will be seriously felt this season, as corn ever so well housed in barn always comes out the same. We know of here and there one who had barned all the barley where the great tythe barns had been allowed to stand. The best of the wheat has already gone to market. On many farms the oat crop is a light one, below an average. Peas a good crop where harvested before the rain, and covered. Beans better than last year, but not an average, and carted very damp. On some farms the wheat crop was got-in in a month, on others in nine weeks, which has made one of the most expensive harvests we ever knew. Potatoes more than half rotten, and the turnips are equally as bad by blight; so that the conclusion of harvest-home is more a day of lamentation than rejoicing, which will leave the farmer in a bad plight for his year's outlay of capital. There is a great loss in lambs again with the scour. We are thankful to say we are at present free from the cattle plague. The land on the stiff clays ploughs up dreadfully, and autumn tillage is quite out of the question. Wheat-sowing will be very late. The old wheat is nearly exhausted, and large quantities of foreign is being used, as well as rice, Indian corn, &c. We went from Bedford to Bletchley, and from thence to Oxford, and did not see above one good wheat crop per mile the whole of our journey—that was in July—a deal not 12 bushels per acre, being completely choked with filth; and the bean crop the same when examined in the stack-yard. In September, our meadows, for more than forty miles, were a complete sheet of water; and if store sheep are allowed to pasture on them they will no doubt rot. We do not remember a worse season during the past thirty-four years. Cloverseed, excepting here and there where very early, is a total failure.—Oct. 18.

WEALD OF KENT.

After one of the most perplexing seasons experienced for many years past, the ingathering of our harvest is completed. Many of our farmers were fortunate in the securing of their wheat crop; but the yield falls short from what was anticipated. Barley would have been an excellent crop; but the rains have rendered the greater portion unfit for sale. Peas an average crop. Beans will not come out so well: they are got together in such miserable condition that they must remain some time in the stacks before rendered fit for use. Some of the crops of oats will prove satisfactory, both as regards yield and quality, while others caught considerable damage, which will deteriorate their value considerably. Wurzel and turnips will turn out exceedingly well, they are very fine, and the quantity will exceed an average. Potatoes yield well, but are nearly one-half of them blighted. Keep is everywhere plentiful, and the stock will be kept in the pastures for some time to come. We have indeed been very highly favoured in the Weald, having been entirely free from that direful disease the cattle plague. The flockmasters are, on the whole, doing well. The sheep generally are very thriving, and are still fetching high prices. One of the greatest blessings to the farmers of this part of Kent is their crop of hops, which this season has been so wisely proportioned to all. The yield quite an average, and the major part sold at prices which will fill their coffers to overflowing. We do hope landlords will not take advantage of their better position by advancing their rents; for before doing so, they should consider what damage is done to their corn crops by being overrun with rabbits; and should their hops prove a failure, they would have nothing to fall back upon. Therefore, it is in the power of the landowners to afford facility to their tenantry, who would in return improve the condition of the working-classes.—Oct. 20th.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BAKEWELL FAIR.—There was a large show of sheep of every description, particularly of the poorer sorts. Store ewes made from 48s. to 57s. each, the average price of fair sheep being 55s. Theaves 43s. to 53s., average 48s.; wethers from 50s. to 55s.; lambs 27s. 6d. to 38s., ram lambs 38s. to 70s. Mutton 7½d. to 8d. per lb. Many lots of all classes remained unsold at the close of the fair. Small pigs 22s. to 28s., strong pigs 45s. to 57s., sows 50s. to 70s. Trade brisker.

BANBURY FAIR.—In the sheep market the supply was not very large. Mutton made from 5s. 6d. to 6s. per 8lbs.

BOSTON SHEEP MARKET.—Only a small show of fat sheep, with no alteration from last week's prices. The number of lambs on offer was not so large as that of last week, and the trade did not appear to be particularly brisk. There was a large quantity of pigs penned, and the greater part changed hands at high prices.

BRIDPORT FAIR.—Nearly 1,000 sheep were penned. Business was pretty brisk, and a clearance was effected at late rates. Horn ewes realised from 60s. to 63s., Down ewes 45s. to 50s., cross-bred lambs 34s. to 36s., horn lambs 32s. to 36s., and fat wethers about 9d. per lb. There was a good number of horses, and cart colts sold at from £20 to £30 each.

DALKEITH FAIR.—The stock numbered about 3,000 head, and consisted mainly of Irish cattle and polled Galloway bullocks. Prices were a shade back from Falkirk, and at the close a great many lots remained unsold. The West Highland cattle exhibited were quite unsaleable, and were taken out of the market early in the day. In the horse market there was a larger show than usual, but few good animals were on sale. Trade, except for animals of fashion and promise, was dull. The best class of draught horses sold at from £30 to £45, secondary sorts at from £15 to £25, harness horses at from £20 to £35, at ponies at from £10 to £18.

FARNINGHAM FAIR.—The demand was brisk for high class horses, and prices of handsome cart horses ranged from 45 to 60 guineas, and secondary ditto 18 to 30 guineas, promising cart colts 25 to 40 guineas, horses for private carriage purposes 55 to 70 guineas, saddle horses and riding cobs 20 to 30 guineas, well-bred hunters 70 to 110 guineas, and nag colts 25 to 40 guineas. The whole of the sheep penned up were sold out early. There was a good demand for pigs, and which made high prices.

GLOUCESTER MONTHLY MARKET.—The supply of sheep was large and in fair average condition. High prices were asked, and for some time business were dull; but subsequently lower rates were accepted, and ultimately a clearance was effected. Good wethers fetched fully 9d. per lb., ewes from 8½d. to 8¾d., and lambs fully 10d. Pigs sold at from 9s. 6d. to 10s. 3d. per score.

GRANTHAM FAT STOCK MARKET.—A short show of sheep, and plenty of buyers. High prices were asked, but little business was done. Mutton 8d. to 8½d.

HEREFORD OCTOBER FAIR was held on Wednesday last, and taken altogether it was very dull in comparison with those held before that fearful visitant to our country, the rinderpest, made its presence known on our happy isle, and committed such fearful ravages amongst our herds of Whitefaces, Devons, and other breeds of cattle for which this county is justly celebrated. It was indeed a different scene when walking through the streets on Wednesday to what it was some few years ago, when the ears of the passers by were filled with the noise of the busy hum of jolly farmers and 'cute dealers bargaining for and conversing about the merits of the different breeds of cattle under their notice. We will now proceed to notice the other stock that was exhibited, at the same time hoping that by next October fair the dreadful plague will have entirely disappeared, and that we shall have the pleasure of hearing the lowing of our fine breed of Hereford cattle in our streets once more, on their way to the market. First of all, we will notice,. the horses, of which there were a goodly number in offer especially of the heavy cart breed. Most of them fetched very good prices, the prices ranging from £14 to £35 each, many being bought at an average figure between the two prices mentioned. There were but few hacks in offer, though those that were in the market were very good ones. There were also some few Welsh ponies, which commanded very good prices. There was not a large show of sheep, but those that were in the market were very good samples, and fetched good prices, the average being for ewes 8½d. per lb., and for wethers 8½d. to 9d. There was not much inquiry, and sales were rather dull, especially for the latter. In the pig pens there was a very good average show of fat and store animals, and the prices ranged 5s. to 5s. 6d. per stone. On entering the market our attention was instantly attracted to two very fine animals which had been sold for £19 10s. the pair, one weighing from 45 to 50 stone, and the other about 40 stone. They were splendid specimens of the porcine tribe, but for our own consumption we should prefer something smaller.

LINCOLN FAT STOCK MARKET.—A small supply, and prices in advance of last market, fat sheep making from 8d. to 9d. per lb.

LOCKERBIE OCTOBER TRYST.—The show of stock was nearly 4,000 head above the number at the corresponding market of last year. It was composed of 2,135 half-bred lambs, 2,150 Cheviot wether lambs, 810 Cheviot ewe lambs, 5,560 Cheviot ewes, 1,635 lambs, 540 blackfaced lambs, 980 blackfaced ewes, 850 Cheviot gimmers and wethers—total, 10,660 head. The stock generally was in good condition. Such a large show of Cheviot draught ewes was never before seen at Lockerbie fair. There was a great scarcity of buyers, and it was soon apparent that there were not sufficient for the stock. Some of the largest kinds were in the hands of breeders, but the half of the stock was held by dealers. The value of sheep has decreased very much of late, and a slow market was expected, but the result was far worse than any one expected. Lambs were 5s. to 8s. 6d. in many cases below the prices current in August, though in most cases they were bringing the prices of the September market, but in all cases losing their keep since that.

MAIDSTONE FAIR.—There was a very large supply of first-class horses, in which a good trade was done, colts realizing 30 to 40 guineas each, while some good five-year-olds fetched as high a price as £50 each. Best lambs were readily sold at from 40s. to 50s. each, while fine sheep, of which there was an unusually large supply, averaged 6s. per stone. Pigs also sold well: store pigs 18s. to 23s., porkers from 4s. 6d. to 5s. per stone, and large porkers 4s. 4d. per stone.

MICHELL FAIR.—About 3,800 sheep were penned. The sale for most kinds of sheep were rather sluggish, but before the close of the fair about three-fourths of the entire number were sold. Fat wethers about 7½d. per lb. Store wethers dull sale. Store ewes (of which there was a superior lot) ranged from 42s. to 55s. each.

MID-CALDER FAIR.—The horse market was complained of as dull, but really good horses were in demand, though very few were shown. Of the secondary and inferior descriptions there was a large show, but little demand. Mr. Stark, Mid-Calder, showed a superior lot of draught horses, and sold a number at prices ranging from £20 to £43, and several saddle and harness horses from £18 to £30. Messrs. Brown, Biggar, sold a number of draughts at from £25 to £28; and one four-year-old filly, to Mr. David M'Gibbon, Inveravon, at £45; they also bought two and three-year-olds at from £20 to £30. Mr. Aitken, Edinburgh, sold some colts at an average of £30. Of horned cattle the show was very small. Two-year-old cross-bred stots realised from £9 to £11 each; and Mr. Martin, Corstorphine, bought a lot of spring-calving Ayrshire queys at £10 each.

MINSTERLEY FAIR.—There was rather a scanty supply of sheep, which soon found purchasers at an average price. Pigs were more numerous, and were soon sold. Stores ranged from 40s. to 70s. each, and fat pigs, of which there were some fine lots, realized more than 6½d. per lb. There were a few horses, but no demand.

PENISTONE FAIR.—We had a very good show. There was a good attendance. Country farmers were very eager to sell, but by no means at lower prices. Good ewes made from 48s. to 50s., extra lots 56s.; rams 41s. to 50s., prime breeds 62s.; lambs, ordinary 36s. to 49s., good and useful 50s. per head, and some very good ones sold at more money. There was only a poor show of pigs, and business was very slow, especially in small ones. Many lots were left on hand. Little pigs from 18s. to 28s., stores 35s. to 50s. per head. Bacon pigs 7s. 6d. per 14lbs.

PENNYMUIR EWE FAIR.—The show was a large one, but owing to the general dulness which pervades all the sheep markets at present business on this occasion was very languid. Prices compared with last year were down 6s. to 12s. a head.

REDRUTH FAIR.—There was a good supply of sheep and horses (horned cattle still being prohibited). Sheep sold well in the early part of the day: fat ewes and lambs at about 7d. per lb., and store sheep at an average of 6d. per lb. The horse was heavy throughout, and but a small number changed hands.

SHERBORNE FAIR.—The supply of sheep was short, but business was not brisk, the demand being kept in check by the high prices asked, the lower prices submitted to at the close of Weyhill leaving their influence upon the buyers. Towards dinner-time, however, many sales were effected at satisfactory price, and on the whole a good business was done, and a great deal of money passed. Down wethers brought 58s., Down ewes 54s. to 56s., lambs 30s. to 46s. Some capital store pigs brought 40s. The horse fair was confined to the usual rough descriptions, and there was scarcely an animal there worth a £20 note.

THORNE FAIR.—There was only a thin attendance. A few lots of sheep did not meet with very ready sale. Some good horses were sold, and many second-rate animals were in the fair.

WOOLER FAIR.—There was a good show of half-bred Dinmonts, but very few Leicesters. Prices of Cheviot ewes and wedders would range from 10s. to 11s. per head below last year's figures. Leicester Ewes: The Marleyknowe lot fetched 52s., Blinkbonny 51s., Rosenden shots 48s., Mardon 50s., Earl 49s. 6d., Wandon 47s. Leicester Dinmots: The Snitter (Mr. Allan's) 52s. 6d., Lorbottle (the Hon. Captain Liddell's) 48s., Sharperton Edge two-shear 48s. The Coldmartin 50s., Fenton Hill 46s., Mindrum 52s. 6d. Half-bred Dinmonts: The Akeld lot 45s., West Ditchburn 45s., Great Ryle 46s., The Flotterton 42s., New Etal 40s., Low Broomepark 40s. Half-bred Ewes: Ilderton Rectory 43s. Cheviot old Wedders: The Laughrigg lot 35s., with a luck-penny, The Rigg 36s. Broadstruther young Wedders: Packs 28s. 6d., Bloweary 25s. Cheviot Ewes: The Greensidehill packs 30s., The Trowburn do. 27s., The Grange 28s., Coldburn 29s. 6d. In the pig market there were about twelve carts, containing their noisy freights; prices for the best store ones ranged from 20s. to 35s.

YORK FAIR.—Six thousand sheep penned. The sale a sluggish one, and prices declined slightly from those of last fair, whilst a very large portion was left unsold. Mutton sheep were in very slow demand, light weights realizing 7½d. to 8d., and heavy weights 6½d. to 7d. per lb. There was a fair show of good-bred English lambs, and prices tended upwards. The advanced state of the season brought few rams or ewes into the market, the prices of which tended downwards.

PRICES of BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—	s.	s.	CHEESE, per cwt.—	s.	s.
Friesland	122 to	124	Cheshire	72 to	84
Jersey	94	110	Dble. Gloucester	74	78
Dorset	126	130	Cheddar	76	84
Carlow	—	—	American	66	74
Waterford	—	—	HAMS: York	90	98
Cork	—	—	Cumberland	90	98
Limerick	—	—	Irish	—	—
Sligo	—	—	BACON:—		
FRESH, per doz., 12s. 0d. to 16s. 0d.			Wiltshire	70	76
			Irish, green	64	68

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Oct. 22.—Our Butter trade is firm, and of fine fresh qualities more money is made.

Dorset, fine	134s. to 136s. per cwt.
Devon	120s. to 124s. „
Fresh	14s. to 17s. per dozen lbs.

CARMARTHEN BUTTER MARKET, (Saturday last.)—A large delivery of butter to this market, with a slow demand and drooping prices—fully 4s. per cwt. below last report, and lower prices anticipated. Best butter about 116s. to farmers, secondary qualities 112s. ditto. Cheese lower, 22s. to 25s.

BAKEWELL CHEESE FAIR.—A very large show, and in better condition than last fair. Prices ranged from 60s. to 70s. per cwt.

BISHOPSTOKE CHEESE MARKET, (Thursday last.)—There was a large supply, of very good quality, and in good condition. The buyers were few, and consequently only about half of that exposed was sold, at a reduction of 2s. to 3s. per cwt. on last month's prices.

BRIDPORT CHEESE FAIR was not well supplied, and trade was consequently not brisk. Dorset Cheese realized from 32s. to 40s., American 80s. to 90s., household 32s. to 42s., half-skim or Somerset 56s. to 60s. per cwt.

GLASGOW CHEESE MARKET, (Wednesday last.)—The market still continues overstocked. To-day, very little business was doing, only about 10 tons having passed the scales. Prime Cheese maintain and bring full prices. Dunlop new 61s. to 67s., Cheddar-made new 67s. to 71s., skim-milk 26s. to 29s. per cwt.

GLOUCESTER MONTHLY CHEESE MARKET.—About 100 tons of cheese. For ordinary and secondary qualities trade was stagnant, and a decline of 2s. per cwt. had to be yielded; but really fine lots were in brisk demand, at full prices. Best singles realised from 62s. to 65s., and seconds from 52s. to 56s. per cwt.

SALISBURY MONTHLY CHEESE MARKET.—About 250 tons were pitched. The attendance was good, and nearly three-fourths of the supply changed hands, at a decline of from 3s. to 4s. per cwt. Skims realized from 26s. to 34s., half-skims 50s. to 66s., Somersets 60s. to 67s., Cheddars 70s. to 80s. per cwt.

GLOUCESTER CHEESE FAIR.—About 100 tons were pitched. Secondary qualities declined 2s. per cwt., but fine samples were quickly taken up, at full rates. Best singles sold at from 62s. to 65s. to 65s., and seconds at 52s. to 56s. per cwt.

WEYHILL CHEESE FAIR, (Monday last.)—There was a brisker business. Cheese-dairymen stood out, and obtained from 12s. to 18s. per cwt. more money for their produce than at last year's fair. The closing prices were, for best double Wilts 70s. to 76s. per cwt., ditto double Somersets 70s. to 84s., and singles 56s. to 65s., Cowards 50s. to 55s., and Cheddars and prime sorts 85s. to 100s. per cwt. There were several job lots sold wholesale.

HOP MARKETS.

BOROUGH, MONDAY, Oct. 22.—We have no alteration to report of our market, which continues steady at former quotations. The business transacted is chiefly of a consumptive character; but an increased demand is expected before long-as prices may now be considered as firmly established. New York advices to the 6th inst. report the market as very firm, and prices advancing. Prime samples of Americans command from 62s. to 65s.

Sussex	140s. to 168s.
Weald of Kent	140s. to 175s.
Mid and East Kent	160s. to 220s.
Farnham and Country	160s. to 223s.
Yearlings	90s. to 140s.

WORCESTER HOP MARKET, (Saturday last.)—A considerable business has been done to-day on this market, the very choicest samples being most in request, and for these full rates were easily obtainable; good secondary sorts, although not so much sought after, found buyers at our late currency, while the lower class of samples, and more especially the very lowest things, were in less request, so that on these a concession in price had to be made to force sales. We noticed to-day more low samples than on previous days, and many of these much lower than we had seen before. The ticket issued at the public scale marks 648 pockets new weighed to-day, and 633 pockets previously this week. Present currency: Choice Mathon and Golding sorts £10 5s. to £11 5s., fine white-bined and the best mixed sorts £9 to £10, lower things £8 and upwards, all at per cwt. cash at the scale.

WEYHILL HOP FAIR, Monday, Oct. 15.—There was again a large attendance of hop-growers, factors, and consumers, and business opened actively, and many speculators who purchased whole growths broke bulk and resold pockets in suitable parcels. Kent hop-growers stood out for advanced prices, and many growths pitched and represented by sample were held over from offers of from £10 to £10 10s. per cwt., and will be on sale at the great Kent hop fairs. Among Sussex hops large sales were effected at from seven to eight guineas per cwt., and discoloured and yearlings at £5 to £6 per cwt. Good Worcesters were in great request, and all have been sold, and towards the close of the day's fair many hop-growers whose produce was inferior accepted reduced prices rather than cart the bulk home to risk sale at other hop markets. Farnhams maintained the top prices, and upwards of 400 pockets of these Surrey hops were transferred to two eminent pale-ale brewers. Very few hops of bright colour and fine aroma remain unsold, and the prices have varied from 12 to 13 guineas per cwt. on the average. There has been a fair business in foreign hops, and some bright and well-cured samples represented continental growths. The average yield of this season's growth of hops has been a great topic of discussion, and it is estimated that if the hop duty now had an existence, this year's duty would be equivalent to that of 1858, when £254,000 (the lowest for some years) was paid to the Inland Revenue as hop duty.

BRIGHTLING, Oct. 17.—The whole of the hops are secure in good condition, and are of a fair quality, considering the adverse season we have had. The yield per acre comes up better than expected one time, being nearly 10 cwt.—an average very good for Brightling. It is likely to prove the more profitable in the farmer's balance-sheet than last year's growth; the prices keep firm. In seasons such as the one just over, the pickers fare but indifferently; with exceptions, their earnings this season have been small, taking into consideration the wet weather, which has made the work a most comfortless one, and very bad for the women and children, the gardens having been in a very moist condition all through the picking, quite the reverse from the year 1865: not one wet day during the season of last year.—*Sussex Express.*

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

The best half of October being fine, partly made up for the unseasonable weather in August and September; but on the 18th there was a renewal of rain, followed by a warm muggy atmosphere and frequent showers, leaving the remnant of the harvest very little chance of being gathered in marketable condition. In Scotland there are yet many fields of unripened oats, and the record against this season will be that it was one of the worst. Yet there have been lucky exceptions, and many of our agriculturists in this happy condition will receive a pecuniary benefit beyond their expectations. After a series of low-priced years, the possibility and probability of a great change has rather suddenly flashed upon them, and we really hope that those who have been seriously injured in the condition and quality of their corn will find some compensation in its enhanced value. We were first in doubt about ourselves, but a few weeks have made the deficiency more apparent. France hung over us like a cloud to be dispersed by sunshine or discharged in storms, and the stormy urgent demand from that country, felt not only here, but all over Europe, has settled the matter of that nation's necessities. Europe generally has not been so badly off, and the fine weather in October, with the late gatherings in the north, has been highly serviceable all over the Baltic provinces and Pomerania. But another former "friend in need," America, by her latest and repeated reports, shows not only that she is no longer reliable as a source of supply from very general failures, but that they reach to such an extent as to suggest anxious enquiries whether Europe is in a condition to meet any extraordinary demand from the other side of the Atlantic. A few stray shipments of barrel flour do yet occasionally light on our shores, but never in any quantity so as to influence prices, and though the crop of maize there has been unusually good, the late rains and frosts have lessened it, which, together with the deficiency in wheat, have forced up prices beyond expectation. The London market was about the last fully to realise this state of things, and has rather acted as an incubus upon than as a spurt to the country; but millers and factors, now of the soberest hue, look upon the future as something like "danger ahead." The rise in wheat has been about 4s., and all grain has followed the improvement, not relatively, but each on its own merits. The following were the prices recently quoted at the several places named: White wheat at Paris 66s., red 63s.; Baltic red at Antwerp 63s.; old Polish at Rotterdam 64s.; red marks at Hambro' 60s. 6d.; Mecklenburg 61s. 6d.; red at Roctock 58s. 9d. cost and freight, or 56s. free on board; at Stralsund 56s.; at Stettin 54s.; fine high-mixed at Danzic 62s. free on board; Ghirka afloat, freight included, to 55s. 6d.; Berdianski to 54s. 6d.; Marianopoli 55s.; Banat from Trieste 54s. 6d. per qr., freight included; new Chicago spring, per 480lbs., 62s. 3d., No. 2, 57s. 6d. So little winter wheat was on hand, it was not quoted.

The first Monday in Mark-lane commenced on moderate arrivals of wheat, both English and foreign. The morning's exhibition of samples from Kent and Essex was limited, and factors at the opening were asking from 1s. to 2s. per qr. more, though this was useless. But little was doing in foreign. Russian sorts sold slowly at previous rates; but fine Baltic qualities were held at more money. Floating cargoes went off freely at unaltered prices. More quietness was evinced generally in the country markets, though here and there the upward movement continued, and almost everywhere fine dry qualities maintained the previous currency; but inferior were 1s. cheaper in many localities, and difficult to place. Liverpool was dull throughout the week. At Glasgow and Edinburgh no change of value was noted. Dublin was fully as dear.

On the second Monday there was rather less English wheat in the returns; but the foreign arrivals were heavier than for some time past. The show of samples from the near counties this morning was small; but the weather having been fine for the late gatherings, and the foreign supplies being so heavy, secondary and inferior lots were fully 1s. to 2s. per qr. cheaper; but we did not see much difference in the value of the best qualities, though factors generally made no exception in their favour. In spite of the large supplies of foreign, holders did not quote lower rates, though to have forced sales it would certainly have been necessary to make some concession. The tone of the country markets this week seemed lowered by the advices from London, and but few markets were reported as paying the same prices for even the driest samples, while the general runs being inferior and out of condition were mostly reported 1s. to 2s. per qr. lower. Glasgow and Edinburgh made no change in their advices. Foreign wheat at Dublin was very firm; but native, being offered in poor condition, was dull and rather lower.

The third Monday exhibited very small arrivals of home growth, and the foreign supply, though ample, was less than one-half of the previous week. There were fewer samples sent up in the morning to Essex and Kentish factors than for some time past, and with French orders for English red off the east coast, as well as for extra dry foreign in town, factors were enabled to establish an advance of fully 1s. per qr. on all well-conditioned lots. The foreign trade also felt the upward movement, and was generally dearer to the same extent. Floating cargoes sold readily at somewhat improved rates for extra fine quality. The country advices were all upward in their tendency this week, the earliest showing the smallest advance; but as the London market rose 1s. to 2s. on Wednesday, and this was fully supported on Friday, the advance of 1s. to 2s. became general, and in several instances it was 2s. to 3s. per qr. Glasgow was 2s. to 3s. per qr. dearer, and the Irish markets were all advancing, though not at an equal pace.

The fourth Monday commenced on moderate English and large foreign arrivals of wheat. The show of samples this morning from Kent and Essex was small; and all the country markets being dearer, there was a smart demand for dry qualities at fully 3s. per qr. advance. With a good attendance from the country, there was a fair inquiry for all qualities of foreign at a similar improvement. Floating cargoes were also active at 3s. per qr. more money. This movement was very generally followed throughout the country, the lowest advance, as at Melton Mowbray, being about 2s. per qr.; and the highest about 4s., as at Spalding, making an average rate of 2s. to 3s. per qr. Glasgow was 1s. to 1s. 6d. per boll dearer, and Edinburgh 2s. to 3s. per qr. Dublin found a fair demand, at 1s. per brl. improvement on native and foreign qualities. The following Friday's market at London, with small supplies of English and good arrivals from the continent, was very firm.

The imports into London for the four weeks were 24,921 qrs. English, 119,446 qrs. foreign, against 34,057 qrs. English, 123,383 qrs. foreign for the same time in 1865. The London exports, chiefly to France, were 10,840 qrs. wheat, 682 cwts. flour. The London averages commenced at 53s. 6d., and closed at 55s. 8d. per qr.; the general average began at 49s. 8d., and closed at 52s. 2d. per qr. The imports into the kingdom for four weeks were 1,264,987 cwts. wheat, 131,365 cwts. flour.

The flour trade, like that of wheat, has found some fluctuations, but the tone throughout has been mostly upwards, closing with a gain of about 4s. on Norfolk qualities and other country marks, of 2s. on foreign sacks and barrels, and 5s. on town rates, leaving 55s. as a top price for the last. The imports into London for four weeks were 77,959 sacks country-made, 6,895 sacks 3,868 brls. foreign; against 73,539 sacks country-made, [illegible]68 sacks 13,551 brls. foreign for the same period in 1865.

The barley trade, after some hesitation and a downward tendency after successive weeks of short supplies, closed with an upward movement. An exceptionally fine parcel of malting on the last market brought 52s., while inferior stained and damp English have been of uncertain value, though perhaps worth 32s.—a price which in former years was considered fair for the primest qualities. Danubian exports being prohibited must necessarily keep our foreign supplies short through the season, and very low rates, with all other grain dear, seem unlikely; but we can hardly depend on the continuance of such a range of prices as now obtains of malting sorts, which have commanded 46s. free on board at Hambro'. The imports into London for four weeks were 18,538 qrs. British, 21,166 qrs. foreign; against 12,171 qrs. British, 44,213 qrs. foreign in 1865. It was impossible that malt should be stationary while such high rates have been paid for fine barley, more especially as the samples of new have given much satisfaction, and rates have therefore risen gradually 4s. to 6s. per qr.

As to oats, the damage done in Scotland, and the protractedness of the season, with the certainty that winter will materially reduce our foreign imports, have all contributed to enhance prices, though the inferiority of some new foreign, and the general repletion of dealers, have now and then brought on a temporary decline. The month's gain has certainly been 1s. 6d. per qr., 38 lbs. inferior Russian being worth 23s., and only a little while back, during the heaviest imports, such corn could have been bought at 18s. per qr. Those importers, therefore, who during the glut had courage to land their cargoes, will be more than reimbursed to the extent of the charges. It will be seen by the figures below that scarcely anything has come from Scotland and very little from Ireland. The London receipts for four weeks have been in English qualities 13,120 qrs., Scotch 93 qrs., Irish 4,920 qrs., foreign 146,584 qrs., against 11,935 qrs. English, 705 qrs. Scotch, 6,715 qrs. Irish, 209,801 qrs. foreign in 1865.

With scarcely any foreign imports of beans, our own crop only moderate in quantity and bad in quality, and the fact that there has been an overflow of the Nile in Upper Egypt, carrying away much corn standing on the river banks, beans have been improving in value from 1s. to 2s. per qr., and as neither France nor Barbary sends us anything, and hard qualities for splitting are much wanted, it seems buyers will be forced upon the more plentiful use of maize; and, indeed, this grain has already improved 3s. to 4s. per qr., while the prospect of large imports has greatly diminished by recent advices from New York and the Western States. The London imports of beans for four weeks has been 2,550 qrs. English, 1,415 qrs. foreign, against 2,885 qrs. English, 7,212 qrs. foreign in 1865.

Peas having failed this month as to foreign supplies, have slowly followed the rise in beans, and should there be a hard winter, and the old-fashioned habit be generally resumed of adding peas-pudding to boiled pork, we may find a further advance in boilers, which now are only 44s. to 45s. per qr. The imports into London for four weeks were 3,706 qrs. English, 50 qrs. foreign, against 3,000 qrs. English, 8,634 qrs. foreign in 1865.

Linseed, with slender imports and no prospects of increased supplies, has kept its price, and so it must till a generally good harvest is noted in Russia and India. Cakes have sold freely at full rates.

With but a poor look-out as respects the crop of cloverseed, holders of the small stocks of red and white have been repeatedly raising their pretensions, till 56s. per qr. is demanded for old red American. Mustardseed has partially revived, as well as tares and canaryseed, and all seeds give better promise of paying holders than recently.

AVERAGES

FOR THE LAST SIX WEEKS:	Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.
Sept. 8, 1866	47	3	36	1	25	3
Sept. 15, 1866	47	0	37	1	25	[illegible]
Sept. 22, 1866	49	8	37	10	24	9
Sept. 29, 1866	51	5	40	1	24	8
Oct. 6, 1866	52	2	41	4	23	1
Oct. 13, 1866	52	7	42	1	23	6
Aggregate Average	50	0	39	1	24	3
Averages last year	41	11	30	9	20	11

IMPERIAL AVERAGES

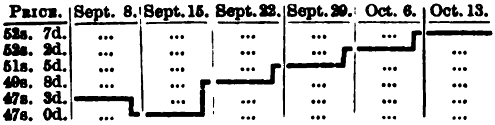
For the week ended Oct. 13, 1866.

Wheat	78,065⅝	qrs.	52s. 7d.
Barley	52,798⅛	,,	42s. 1d.
Oats	5,199⅜	,,	23s. 0d.

COMPARATIVE AVERAGES.

	WHEAT.			BARLEY.			OATS.		
Years.	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
1862...	70,019⅝ ...	49	6	32,679⅛ ...	34	8	15,285⅛ ...	21	5
1863...	84,887⅞ ...	41	0	68,758⅜ ...	34	7	11,635⅜ ...	19	4
1864...	76,126⅜ ...	38	9	44,750⅛ ...	30	2	10,264⅜ ...	20	0
1865...	80,312 ...	41	11	40,246⅜ ...	30	9	6,537 ...	20	11
1866...	78,065⅝ ...	52	7	52,798⅛ ...	42	1	5,199⅜ ...	23	0

FLUCTUATIONS in the AVERAGE PRICE of WHEAT.



PRICES OF SEEDS.

BRITISH SEEDS.

Mustard, per bush., brown 16s. to 18s. white	12s. to	16s.
Canary, per qr.	58s.	68s.
Cloverseed, red	00s.	00s.
Coriander, per cwt.	18s.	20s.
Tares, winter, new, per bushel	4s. 6d.	5s. 0d.
Trefoil	21s.	24s.
Ryegrass, per qr.	22s.	24s.
Linseed, per qr., sowing 68s. to 72s., crushing	66s.	68s.
Rapeseed, per qr.	58s.	60s.
Linseed Cakes, per ton	£10 10s. to	£11 10s.
Rape Cake, per ton	£5 0s. to	£5 10s.

FOREIGN SEEDS.

Coriander, per cwt.	18s. to	20s.
Cloverseed, red 50s. to 56s., white	72s.	84s.
Trefoil	18s.	20s.
Ryegrass, per qr.	18s.	20s.
Hempseed, small 38s. per qr., Dutch	40s.	42s.
Linseed, per qr., Baltic 64s. to 68s....Bombay	71s.	72s.
Linseed Cakes, per ton	£9 10s. to	£11 10s.
Rape Cake, per ton	£5 0s. to	£5 10s.
Rapeseed, Dutch	51s.	60s.
Carraway ,,	36s.	38s.

POTATO MARKETS.

SOUTHWARK WATERSIDE.

LONDON, Monday, Oct. 22.—During the past week the arrivals coastwise have been very small, but considerable by rail. The trade has been good for sound and first-class samples, but inferior sorts were a very dull sale. The following are this day's quotations:—

Yorkshire Flukes	per ton	90s. to 120s.
,, Regents		70s. to 90s.
Lincolnshire Regents		70s. to 80s.
Dunbar and East Lothian Regents		80s. to 100s.
Kent and Essex Regents...		50s. to 100s.
,, ,, Rocks		70s. to 100s.
Perth, Forfar, and Fife Regents ...		70s. to 80s.

BOROUGH AND SPITALFIELDS.

LONDON, Monday, Oct. 22.—The accounts respecting the disease are again unfavourable. The supplies of potatoes on sale are fairly extensive. Fine parcels move off freely, at full prices; otherwise the trade is heavy. The imports into London last week was 16 bags from Amsterdam, 54 tons from St. Brieux, and 565 sacks from Dunkirk.

Regents	40s. to 120s.	per ton.
Rocks	50s. to 90s.	,,
Flukes	90s. to 150s.	,,

COUNTRY POTATO MARKETS. — York, (Thursday last): We had a very good show of Potatoes, which sold at 8s. per 280lbs., and 8d. per peck.—Knaresborough, (Wednesday last): Potatoes 10d. to 12d. per 21lbs.—Leeds, (Tuesday last): Potatoes 9d. to 10d. wholesale, and 10d. to 11d. retail per 21lbs.—Manchester, (Tuesday last): Potatoes 5s. to 9s. per 252lbs.—Northallerton, (Wednesday last): Potatoes 8d. to 9d. per stone.—Sheffield, (Tuesday last): Common Potatoes 6s. to 8s., round ones 9s. to 10s. per load.—Doncaster, (Saturday last): The supply of Potatoes was not so large, for which the demand ruled brisk, prices ranging from 8s. 6d. to 9s. 6d. per load of 18 stones.—Pontefract, (Saturday last): Potatoes 1s. per score.—York, (Saturday last): The market was again liberally supplied, notwithstanding the reports as to the Potato disease. The prices have an upward tendency, and we cannot quote them lower than from 9s. to 10s. per tub of 280lbs., and 9d. to 10d. per peck retail.

ENGLISH WOOL MARKET.

CITY, Monday, Oct. 22.—Since our last report, the transactions in all kinds of English wool, both for home use and export, have been on a moderate scale; but no actual fall has taken place in the quotations. The supply of wool on offer is by no means extensive.

Current Prices of English Wool.		s.	d.		s.	d.
Fleeces—Southdown hoggets	per lb.	1	7½	to	1	8½
Half-bred ditto	,,	1	9½		1	10½
Kent fleeces	,,	1	8		1	9
Southdown ewes and wethers	,,	1	7		1	8
Leicester ditto	,,	1	7		1	9
Sorts—Clothing	,,	1	6		1	10½
Combing	,,	1	6½		2	0

LEEDS (English and Foreign) WOOL MARKETS, Friday.—There is no change of importance in either demand or price for English wool. The demand for yarns for the continent being almost nothing, tends to keep down the consuption of wool, and prevent an advance in price. There is a steady consumption of clothing wool, but there is not any demand likely at preseut to advance prices materially.

BRADFORD WOOL MARKET, (Thursday last.)—There has been another week of slow, dragging "hand-to-mouth" trade, and this morning's market brings little or no improvement. It is just as we have reported it for several weeks past—dull and inanimate. Spinners take just enough to keep their wheels in motion, but no one is bold enough to buy in anticipation of his wants; as a proof of which, matchings rather than fleece wool seem most in demand. A few staplers report rather more inquiry in hogg wool, and indeed hoggs are quite firm at the price we quoted them some three or four weeks since. The upward movement in cotton during the past week has prevented any decline in the value of wool generally, and the fact that there is no relaxation on the part of country holders encourages staplers here to keep pretty firm to late quotations. There have been instances in which a fractional decline has been submitted to, but these are the exceptions, and not the rule.—*Bradford Observer*.

GLASGOW WOOL MARKET, (Saturday last.)—There is no change to report in the aspect of this wool market. The demand continues dull, and buyers restrict themselves to purchasing for immediate wants. Pieces remain unchanged, and holders are quite firm in their quotations.—*F. H. M'Leod.*

MANURES.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the importers' stores, £12 5s. to £12 10s. per ton.
Bones, £6 Ditto Crushed, £6 10s. per ton.
Animal Charcoal (70 per cent. Phosphate) £5 per ton.
Coprolite, Cambridge, whole £2 10s., ground £3 to £3 2s. 6d. per ton.
Suffolk, whole £2 to £2 10s., ground £2 10s.
Nitrate of Soda, £12 5s. to £12 10s. per ton.
Gypsum, £1 10s. Superphosphates of Lime, £5 5s. to £6 5s. per ton.
Sulphuric Acid, concentrated 1·845 1d. per lb., brown 1·712 0¾d.
Blood Manure, £6 5s. to £7 10s. Dissolved Bones, £6 15s. per ton.
Linseed Cakes, best American barrel £11 5s. to £11 15s., bag £10 5s. to
Cotton Seed Cake, £5 to £5 15s. per ton.

E. Purser, London Manure Company,
116, Fenchurch Street, E.C.

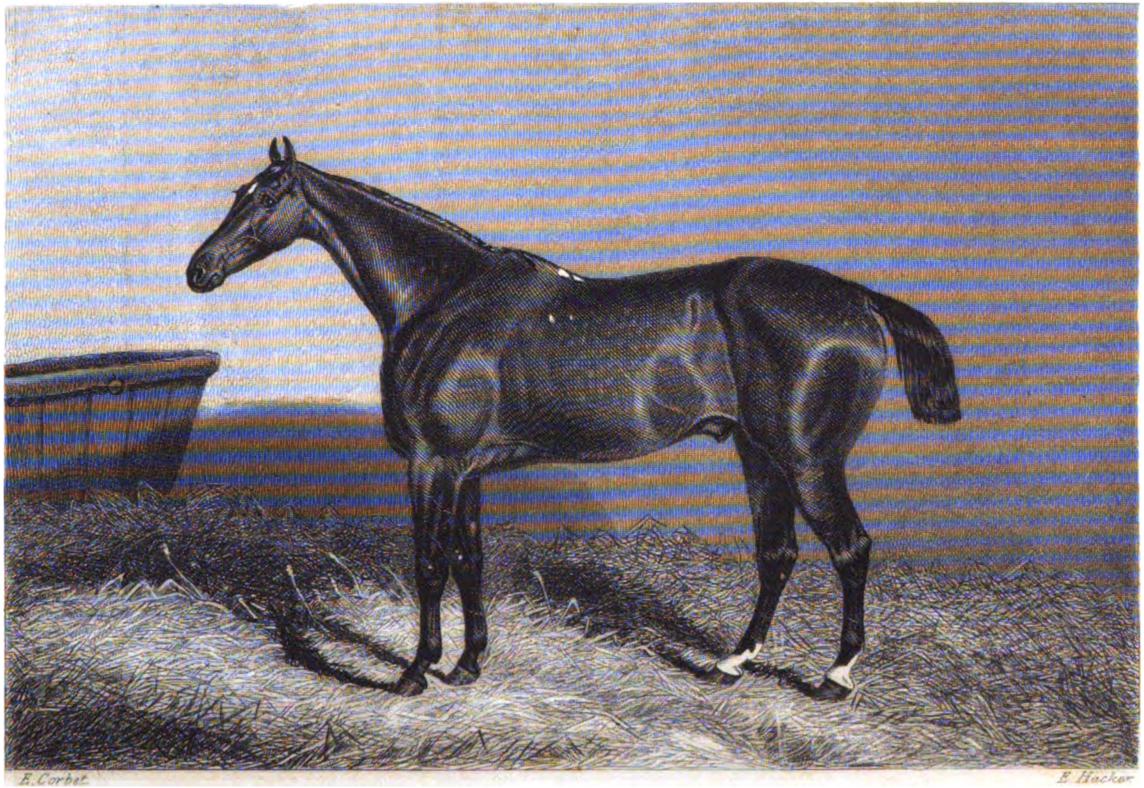
	£	s.	d.		£	s.	d.		£	s.	d.		£	s.	d.
Guano, Peruvian	£12	7	6	to	£0	0	0	Linseed Cake, per ton—							
Do. Upper do.	6	15	0		7	0	0	Americ., thin, bgs.	£10	0	0	to	£10	5	0
Malden Island	0	0	0		0	0	0	Do. in brls.	0	0	0		0	0	0
Bone Ash	0	0	0		0	0	0	English	10	10	0		10	15	0
Brimstone, 2d&3rd	0	0	0		0	0	0	Cotsd. Cake, decort.	0	0	0		0	0	0
Saltpetre, Bengal,								Linsd. Bomby. p. qr.	3	10	0		3	11	0
2 per cent.	0	0	0		0	0	0	Rapeseed, Guzerat	2	15	0		3	0	0
Nitr. of Soda, p. ct.	0	10	6		0	11	0	Niger	0	0	0		0	0	0
Cloverseed, N. Am.								Tallow, 1st P.Y.C.	2	0	0		2	7	0
red, new per cwt.	2	5	0		2	10	0	,, super. Norths	2	5	6		2	6	0

SAMUEL DOWNES and CO., General Brokers,
Exchange Court, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk.

		£	s.	d.
Prentice's Cereal Manure for Corn Crops	per ton	£6	10	0
Mangold Manure	,,	6	0	0
Prentice's Turnip Manure	,,	6	10	0
Prentice's Superphosphate of Lime	,,	6	0	0

Printed by Rogerson and Tuxford, 246 Strand, London, W.C.



E. Corbet

E. Hacker

Rainbow.

The property of [illegible]

London Published by [illegible] 1866

PLATE V.

RAINBOW.

THE PROPERTY OF MR. J. ANSTRUTHER THOMSON, THE MASTER OF THE PYTCHLEY.

Rainbow, an Irish horse, supposed to be by Arthur, was brought over by Mr. Peter Moir, the Scotch dealer, who sold him to Mr. Richard Rayner, the Edinburgh riding-master, not only a first-rate horseman in the school, but a very good man with hounds. The horse passed in turn into the hands of Mr. Anstruther Thomson, who purchased him in 1865, and sent him into Northamptonshire for his own riding, on taking to the Pytchley in the autumn of the same year. Rainbow, then only five years old, distinguished himself during that season in the famous Waterloo run, although he had been at exercise for two hours, and had his water before he went out, being only called on at the last moment to take the place of another horse that had fallen lame. Mr. Thomson rode him as second horse for about the last hour and a-half of the run, and did not get home on him until half-past ten at night, Rainbow having been out about thirteen hours. He, however, was never off his feet, and came out again in his turn. It was stated, in some of the many versions of this extraordinary run, that Mr. Thomson began and ended on Rainbow; but this is a mistake, as the master rode a chesnut mare called Valeria during the first part of it, and only got Rainbow at Gloaston Wood.

At the end of the season, Rainbow was entered for the Islington Hall Show in the 15 st. weight-carrying hunter class, and where he was unquestionably the lion of the Hall. He, however, only reached to the second prize of £30, the first being awarded to Mr. Sutton's Voyageur, and when we thus wrote of the class: "Having disposed of 'the blood horses,' Lord Portsmouth, Sir Watkin, and Captain Percy Williams commenced on the catalogue in regulation order, with the weight-carrying hunters, of which there was no less than forty entries, good, bad, and superlatively indifferent. The most famous nag of the lot, and thoroughly realizing in his every look and movement the modern hunter, was Mr. Anstruther Thomson's Rainbow, the horse his owner rode through the greater part of the renowned Waterloo run with the Pytchley, and that here with a natty second horseman on his back looked wonderfully like business. Rainbow is, in fact, full of varmint character, with a fine neck, well-laid shoulders, and as altogether good forehand; but he finishes off badly behind; with a slack loin and goose rump, so as to scarcely realize the fifteen-stone condition—a point upon which he was fairly beaten by the chesnut Voyageur, a wonderfully clever nag, up to almost any weight, but with plenty of breeding and appearance about him, and that only required to have been better ridden to have made a still more favourable impression. However, he won unmistakably all through, with Rainbow second, and Ingleby, 'the prize horse of last year,' a bad third, as not having since gone on well, though he must have wintered comfortably enough on oilcake and mangolds, being brought out as fat as butter, and as little like work as anything in the Hall. Mr. Thomson's other entry, the roan Phœbus, that was also in the Waterloo run, went very short and stumpy; but he appears to be as handy as a glove, and has many good points about him; and for the pick of the others in this large field we might take Mr. Drage's Luck's All, Mr. Paddison's chesnut, Mr. Fuller's Old Cyclops, of a wonderfully nice stamp, but terribly worn; Mr. Bode's Baron, Mr. Mumford's The Rejected, well deserving of some notice; Mr. Gale's Hopbine, Mr. Booth's Bullfinch, Mr. Oakley's Esca, with very good action; Mr. Jackson's Avonmore, Mr. Campbell's Dainty Davy, and a weight-carrier of John Tollitt's. The judges, however, confined their commendations to Mr. Robson's Ex-President, and a cream-coloured horse from Yorkshire, with nothing remarkable about him but his colour, and that furnished the joke of the day, not one of the judges being willing to admit that he had been any party to such a preference."

Mr. Thomson now writes to say: "I think your remarks about him at Islington were very good, except that you did not give him credit for carrying the weight;" while his owner adds something very acceptable as to Rainbow's character in the field: "He is a dark brown, six years old, and

I I

standing sixteen hands two inches high. He is a *very strong* horse, with the finest temper possible, and can go a good pace, while he is a very bold and very big jumper. He will do his fences anyhow you like, either flying or standing, and will go through any bullfinch you can see through. His great merit is his stoutness." Mr. Thomson testifies, further, to the fidelity of our portrait, by Corbet: "The engraving is very good, especially the very large muscles in his shoulders. The ears are a little too small, and the head rather lean; but it is altogether *an excellent likeness*." The original picture is now in Mr. Thomson's possession.

PLATE VI.

SILVER ROYAL; A LONG-WOOL RAM.

THE PROPERTY OF MR. J. LYNN, OF STROXTON, GRANTHAM.

Silver Royal, bred by Mr. Lynn, is by Battersea Royal, dam by Royal Leeds; Battersea Royal by a son of Mr. Sandy's 57 guineas sheep, the property of Mr. F. Spencer, out of a Silver Medal ewe of Mr. Lynn's own breed.

In 1864 Silver Royal took the third prize in the shearling class of Lincoln or Other Long-wools at the Newcastle-upon-Tyne meeting of the Royal Agricultural Society; and the first prize, of £5, at the meeting of the Leicestershire Agricultural Society.

In 1865 he took the first prize of £20, in the "Other Long-wool" class, at the Plymouth meeting of the Royal Agricultural Society; the first prize of £5, at the Hereford show of the Bath and West of England Society; the special prize of £10, at the Bedfordshire Agricultural Society; the first prize of £8, at the North Lincolnshire Society's meeting, at Market Rasen; the first prize of £5, at the Leicestershire Agricultural Society; and the first prize of £5, together with the special prize of £5 as the best ram, of any age, at the Sparkenhoe Farmers' Club show.

The merits of this Leicester and Lincoln cross are now well known; and, in addition to a good home trade, Mr. Lynn is sending sheep to India, St. Helena, and Australia. Silver Royal, to whose excellence we have often spoken upon meeting him about the country, has, however, been retained for use in his owner's flock, where his produce have answered remarkably well, as taking very generally after their sire—not always such a certainty with the stock of a cross-bred animal.

DRESSINGS FOR CEREALS.

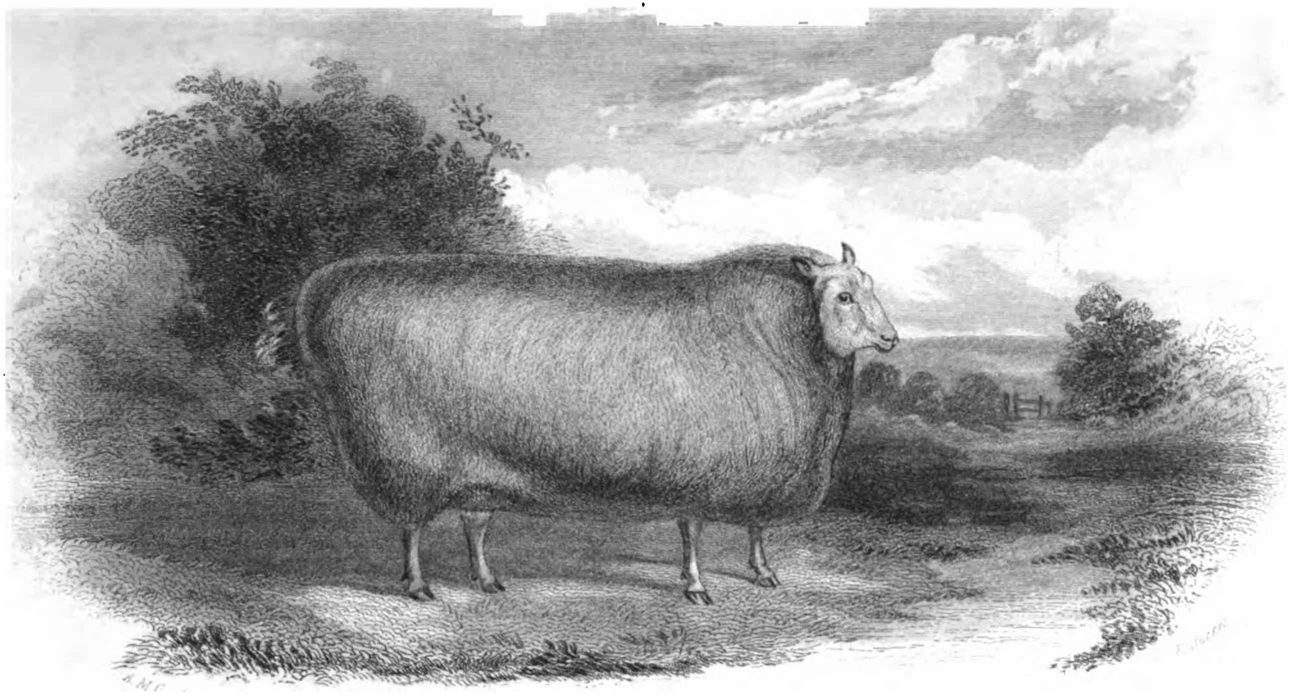
BY CUTHBERT W. JOHNSON, F.R.S.

During the past ten years a series of valuable investigations have been made on the growth of cereal crops. These experiments have been as carefully as laboriously conducted; by men, too, who like Voelcker, Way, Liebig, Lawes, and Gilbert, were anxiously searching after the truth—philosophers who happily stood high enough to afford, if they made an error, to acknowledge the fact. It is now some years since Way arrived at the following conclusion (*Jour. Roy. Ag. Soc.*, vol. xvi., p. 535): "It seems to be proved beyond all doubt by the experiments of Mr. Lawes and Dr. Gilbert, that ammonia is the manure for direct application to the cereals; phosphate of lime being usefully applied to turnips and other root crops, but being quite without effect upon wheat."

Time, however, has led to rather a modified view of this great question. It is certain that on particular soils already abounding in phosphate of lime, the application of this salt is useless; but in many others a very beneficial result is obtained by dressing the soil with bones dissolved in sulphuric acid. In some comparative experiments recently carefully and ably conducted upon wheat in the alluvial soils of Bedfordshire, under the direction of Mr. Edward Purser, of the London Manure Company, the result has been very much in favour of the dissolved bones.

It is admitted that on heavy soils the application of ammonia is of less value to the wheat crop than on the lighter descriptions of land. It is in clay soils that we find the largest proportion of ammonia; while on sandy, gravelly lands it is chiefly deficient. Way some time since alluded to the constant presence of this alkali in heavy soils (*ibid*, vol. xvi., p. 262). He observed: "Recent examinations of the ammonia contained in soils, some of them taken at considerable depths, and long out of the reach of cultivation, have shown a large quantity of this substance to exist in them. Whence was this ammonia derived? Not from manure nor from rain, for in one case I examined a clay of the plastic-clay formation, dug 20 feet from the surface. It was physically impossible, one would think, that either air or water could, in any quantity at least, get access to this depth in so close and tenacious a material; yet I found more than 1 part of ammonia in 1,000 parts of this clay, and I ascribed its origin then, as it still appears to me it should be ascribed, to the waters of the seas or lakes from which the clay was first deposited, and from which, by its absorptive powers for ammonia, it had removed this alkali in an insoluble form. The existence of ammonia in a soil seems an inherent and inseparable result of the presence of clay in the soil, and we may well question whether all ordinary soils in a state of nature do not contain within reach of the roots of plants, especially of large trees, sufficient ammonia to account for any accumulation of vegetation."

It is needless to endeavour to trace the origin of the ammonia which is found in such considerable proportions



Silver Royal.

London Published by [illegible] 246 Strand 1806.

in some soils. It could hardly have been derived I take it, from any other source than from the decomposition of nitrogenous substances, and from the atmosphere. The question has been examined recently by Professor Schulz-Schultzenstein (*Jour. Roy. Hort. Soc., N. S.*, vol. i., p. 123); we need not, however, concur in all his conclusions when we avail ourselves of his valuable paper. He remarks that "Saussure, who made the discovery that rain-water contains a small quantity of carbonate of ammonia, expressed an opinion that the nitrogen of plants might be derived from the air in the form of carbonate of ammonia, that this substance might be developed from animal matters by putrescence and so dispersed in the air, and that organic manure decomposed chiefly into carbonate of ammonia and carbonic acid. The quantity of carbonate of ammonia which is brought down by the rain from the air is, however, so small, that a hogshead of rain-water contains barely half a grain; while, on the other hand, rotting dung, as Davy has shown, evolves, besides carbonic acid, gaseous acetate and carbonate of ammonia, and is by no means entirely decomposed into carbonic acid and ammoniacal gas, but leaves behind a solid ammoniacal *humus* or mould—which is contrary to the views of Ingenhouz, who supposed the whole of the dung passed into a gaseous form by fermentation and putrescence, so that all the constituents which were nutritive to plants were communicated to the air; whereas, on the contrary, the nutritive properties reside, for the most part, in the mould which arises from the dung by means of decomposition.

"The ammoniacal matter in the atmosphere is therefore extremely small; whereas that of the soil, and of many particular soils, is very large. Clay is the richest of all in ammonia. According to Baumhauer, the clay of the Zuyderzee of Holland contains in a thousand parts .075-.078 of ammonia, which is about 0.13 or ⅛ per cent. The virgin forest-soil of Texas contains ¼ per cent. of ammonia; 100lbs. of it contain 6 oz. of sal-ammoniac, or 2 oz. of ammonia. According to Krocker's experiments, loam contains 1-8th per cent., sand and marl 1-20th and 1-10th per cent. of ammonia. In four acres of land having 1 foot depth of soil, containing ⅛ per cent. of ammonia, there are above 16,000lbs., or 4,000lbs. per acre. This quantity is greater than what is given to land by manure. If an acre of land contains 120 cwt. of manure, supposing it to contain 1-200th of ammonia, there are only 66lbs. of ammonia, whereas in the soil just mentioned there are 4,000lbs. The dung is by no means effectual merely by addition of ammonia, but besides by the accumulation of *humus* as a ferment for other constituents.

"The mode in which ammonia is formed in the soil is elucidated by the experiments of Kuhlmann on the formation of saltpetre, and has been further followed out by Mulder in his 'Physiological Chemistry.' Ammonia is formed in rotting, porous matters, which evolve hydrogen; while the nitrogen of the air combines with the nascent hydrogen, as in the rusting of metals by decomposition of water—as, for instance, in damp iron-filings, in consequence of which iron-rust also contains ammonia. So porous fermenting soil without dung forms ammonia by the elimination of hydrogen, which at a later period is oxidized into saltpetre.

"Another form in which nitrogen enters into plants is nitric acid, which is widely diffused in the soil, and generally combined with clay, magnesia, lime, potash, or soda—in many places so abundantly that in Egypt, Thibet, the East Indies, Italy, France, Spain, Hungary, and America the saltpetre effloresces and is easily collected. Nitric acid is formed by the oxidation of the ammonia, which is produced by the combination of the hydrogen eliminated from the soil with the nitrogen of the air. In consequence nitric acid, nitrate of lime, and saltpetre always exist in humous clay and limestone soils. The nitric acid is assimilated by the plants in the same way as other acids and humic acids, since the oxygen is exhaled in light, the nitrogen retained.

"Saussure's view, reproduced by Liebig, that the nitrogen of plants originates from the carbonate of ammonia in the air, and that all manures operate only by the formation of carbonate of ammonia, is therefore altogether erroneous, and can only lead to great errors in practical farming. Liebig's theory of manures runs throughout on the evolution of carbonate of ammonia from the dung, and the addition of gypsum in order to its fixation. It has been supposed that the effect of gypsum depends only on the fixation of ammonia. It is plain, from practical experiments on the effect of gypsum in horticulture and agriculture, that this view is altogether wrong. Gypsum promotes the growth of the leaves and stems only of leguminous plants, as clover and peas, but never the blossoming and ripening of the fruit. On the contrary, gypsum, in consequence of the continued luxuriant growth, hinders the formation and ripening of the fruit, and therefore is very injurious in the cultivation of peas in fields, since these plants, when strewed with gypsum, continue green for a long time and produce with difficulty only a little seed. We have also shown that no neutral salts, and therefore neither gypsum nor sulphate of ammonia, can be decomposed and assimilated by plants.

"Ammoniacal, especially nitrogenous matters, have precisely the contrary effect on vegetation; they promote, that is, the blossoming and formation of fruit, and impede the growth of leaves and stem. We may, therefore, by manuring push the production of fruit and flowers, in fruit-trees, to such an extent that they will at last perish, especially in dry soils. I have myself seen young pear and plum-trees, in certain years, perish from over-manuring. Gypsum never produces this effect, whereas if gypsum operated by the fixation of carbonate of ammonia it must have the same effect as animal manures."

The long-continued and valuable experiments of Lawes and Dr. Gilbert upon the wheat plant have been elaborately described by them (*ibid*, vol. xxv., p. 93). These trials were intended, amid other objects, to test the comparative advantage of using for it ammoniacal and mineral dressings—very considerable questions, to which writing in 1864, they thus allude:

"The records of a field of 14 acres in which wheat has been grown without manure, and by different descriptions of manure, year after year for twenty successive seasons, without either fallow or a fallow crop, and in which the lowest produce was in the first year 15, and in the last 17¼ bushels, and the highest in the first year 24¼, and in the last 56⅛ bushels, cannot fail to be of much interest at once to the practical farmer, to the economist, and the man of science. Accounts have been before reported of the growth of wheat for many consecutive years apparently with great success, and without much evidence of exhaustion, on soils of extraordinary fertility; and the recent experience of the Rev. S. Smith, of Lois-Weedon, has shown that, on his soil at least, many wheat-crops can be taken, under a system of alternate crop and fallow, without reaching, at any rate for many years, the point of deterioration. History also tells us of large tracts of land on which the wheat-crop has been cultivated year after year for many years, but which have eventually succumbed to the unnatural strain put upon them. The records now to be laid before the reader refer to conditions of growth like in some points, but essentially different in most, to those cases to which we have alluded.

"The experiments have been made upon what may be called fair average wheat-land. But, as the rental of similar land in the immediate locality ranges, and has ranged for many years past, only from 25s. to 30s. per acre, tithe free, and its wheat-crop under the ordinary management of the district certainly does not average more than from 25 to 27 bushels per acre once every five years, it is obvious that, in a practical point of view, it can lay no claim to extraordinary fertility, or to be ranked on a higher level than a large proportion of the soils on which wheat is grown with a moderate degree of success under a system of rotation and home manuring. Such, in an agricultural or commercial point of view, were the general characters of the land. Speaking still in agricultural language, it may be said that the soil is a somewhat heavy loam, with a subsoil of raw yellowish red clay, but resting in its turn upon chalk, which provides good natural drainage.

"The questions arise: What are the grain-yielding capabilities of such land? what its powers of endurance? in what constituents, or class of constituents, does it soonest show signs of exhaustion? and how far will the answers arrived at, on these points in reference to it, accord with, or be a guide to, those which would apply to any large proportion of the arable land of Great Britain when farmed in the ordinary way, with rotation?

"When the *Journal* of the Royal Agricultural Society first appeared, now five-and-twenty years since, such questions as these were hardly thought of, excepting by a few philosophers and economists whose speculations were scarcely heard of, and still less heeded, by any considerable number of even the most intelligent of agriculturists. Since that period, however, matters have very much changed; and the history of the change shows it to have been due to by no means one cause alone. Almost coincidently, or at any rate following very closely upon one another's footsteps, and each reacting upon the other, the increase of population, commercial freedom and competition, a vast increase in scientific knowledge, and extensive diffusion both of it and of information of a practical kind bearing upon the farmer's art, have contributed to the wide-spread spirit of inquiry of the present day on such subjects.

"But it is especially to the laborious investigations on agricultural chemistry of Boussingault, and to the generalisations of Liebig to a great extent founded upon them, nearly a quarter of a century ago, that we must attribute much of the stimulus and direction that has been recently given to chemical inquiries in connexion with agriculture."

It was when writing towards the autumn of 1864, that these two fellow-labourers thus arrived at the practical bearing of their experiments (*ibid*, p. 490):

1. On a soil of not more than average wheat-producing quality, and taken for experiment after a course of five crops since the application of manure, wheat has been grown successfully, without manure, and with different descriptions of manure, for twenty years in succession.

2. Without manure, the produce of dressed corn was, in the first year, 15 bushels per acre; in the last, 17¼ bushels; and, taking the average of the twenty years, 16¼ bushels.

3. With farmyard manure, applied every year, the produce was, in the first year, 20½ bushels; in the last, 44 bushels; and, on the average of the twenty years, 32¼ bushels.

4. With artificial manures, the highest produce was, in the first year, 24¼ bushels; in the last 56½ bushels; and, taking the average of the twenty years, 35¾ bushels, or considerably more than the average produce of Great Britain when wheat is grown in the ordinary course of agriculture in rotation; and also considerably more than was obtained in the same field by an annual application of farmyard manure.

5. Mineral manures alone, though applied in the soluble form, increased the produce scarcely at all; that is, they did not enable the plant in any material degree to assimilate more nitrogen and carbon from atmospheric sources than when it was grown on the practically exhausted unmanured land.

6. Nitrogenous manures alone increased the produce very considerably for many years in succession; hence, the soil in its practically exhausted condition was relatively much richer in available mineral constituents than in available nitrogen.

7. The largest crops were obtained when mineral and nitrogenous manures were employed together; and it was by such mixtures, even though they supplied no silica (nor carbon), that the produce by farmyard manure was far exceeded, although the latter supplied not only both silica and carbon, but all other constituents, in larger quantity than they were removed in the crops.

And then, at the termination of their paper, they observe, when alluding to any supposed danger of "injuriously deranging that balance of constituents within the soil which it is essential to keep up" (*ibid*, p. 501):

"At present, at any rate, the produce per acre over the country at large is annually increasing rather than diminishing. The probability is, indeed, that any growing derangement in the composition of our soils will show itself in increasing tendency to abnormal growth, or disease of various kinds, rather than in gradual diminution of, at the same time, healthy crops. There is, however, as yet, so far as we are aware, no well-established evidence showing any clear connection between the essential conditions of our modern system of cultivation, manuring and cropping on the one hand, and the prevalence of particular forms of faulty growth on the other.

"Indeed, on many of our heavier soils, and even on lighter ones if purchased cattle-food be liberally employed, corn crops may be grown more frequently than is consistent with what have generally been considered the established rules of good farming, not only without injury to the soil, but with pecuniary benefit to the producer. On heavy soils, barley of better quality may be obtained after wheat than after a root-crop; but when corn is taken after corn, great attention should be paid to the cleaning of the land, and manure should be liberally applied. When wheat follows another corn crop, not less than 50lbs. to 60lbs. of ammonia (or its equivalent of nitrogen in some other form) should be applied per acre; and when barley or oats follow a corn crop, from 40lbs. to 50lbs. The quantity of phosphate employed with the ammonia should be greater for spring than for autumn-sown corn crops. The manures should be applied at the time of sowing the seed."

It is not very long since Professor Voelcker (*ibid*, vol. xxiv. p. 40) gave a rather modified view of the value of the ammoniacal and phosphatic manures to root and cereal crops. As he remarked, a fair average crop of turnips removes from the soil about 40lbs. of phosphoric acid per acre; an average crop of wheat, about 26lbs.: therefore, a turnip crop, weighing 20 tons per acre, removes from the soil 14lbs. more phosphoric acid than 32 bushels of wheat and its straw. If we suppose the turnips to have been grown with 3 cwts. of superphosphate, containing 20 per cent. of soluble phosphate, the manure will supply 31lbs. of phosphoric acid, and the remaining 9lbs. must be derived from the soil. Although the larger amount of phosphoric acid contained in a crop of turnips accounts, to some extent, for this plant being more benefited by phosphatic manures than wheat, yet I believe the more striking effects produced on cereals, especially wheat, will be found in the different mode in which green and white crops take up food from the soil, and the different duration of their period of growth. The roots of wheat penetrate the soil to a much greater depth, and the plant remains on the ground two or three months longer than the turnip plant. This view of the matter appears to gain strength by the fact that barley, which is a spring-sown crop, is much more improved by a dressing of superphosphate of lime than oats or wheat. On late-sown barley, this manure has a strikingly beneficial effect. A crop of barley does not contain more phosphoric acid than a wheat crop; and yet I have repeatedly noticed the effects produced on it by the application to the preceding crop of 3 or 4 cwts. of superphosphate, made entirely from mineral phosphates and containing no ammonia whatever. Although the superphosphate was applied to the preceding root crop, and no other manure with it, and the turnips were carried off the land, it nevertheless produced on the succeeding barley an effect as plainly visible as in the case when barley is top-dressed with nitrate of soda or sulphate of ammonia.

These valuable researches, then, all tend to support a conclusion to which every practical farmer must have arrived—that it is injurious to the progress of our knowledge of manures to regard as certain any *theory* with respect to the application of fertilizers. No one who has patiently and anxiously watched the growth of a plant under different circumstances can have failed to remark the varying and often inexplicable phenomena which present themselves—these, too, so often and so remarkably contradictory of each other. This truth, however, will never deter our readers, who remember what industry and perseverance have long since accomplished in improving the value of our crops, from persevering in researches which have long met with an ample reward.

THE HERDS OF GREAT BRITAIN.

CHAPTER LII.

THE BRAITHWAITE HERD.

There is no need to speak of the scenery through which we passed one August day on the branch line from Northallerton to Leyburn. It was done to hand in a Richmond paper by the Robins, we might almost say the Donkin of the district. "You can stand," he says, "and see almost to Sedburg north-west, with a valley bursting forth with living beauty and grandeur; and the river moving in its serpentine form, and in all its silvery brightness. You can then turn round and you will be able to see on a clear day eastward, the Cathedral at York, and a landscape of living beauty that becomes overwhelming with grandeur to the intelligent admirers of greatness and beauty. I look forward to the time when the railway shall pass through the valley to every part of England; and when the princely manufacturers will be drawn by the beauties of the Dale, to come and reside here, and fill the Dale with their splendid mansions, so that it should become like Sharon, Carmel, or Lebanon for splendour and grandeur."

Parson's Barn is soon in sight, that once great tryst-ng place of the Edie Ochiltrees of every age and degree, nd for which Yorkshiremen say that they have heard ummer appointments made by the vagrants when they ave been strolling in Hyde Park. At a little to the ight is Spennithorne, in whose "Throstle's Nest" poor ob Marson, the jockey, made his last investment, not ong before he was carried to its church-yard. Middle-am, with its castle on the hill, we leave to the right, nd wind round by East Witton, where the grass is ardly grown on the grave of Tommy Lye, through lanes, which two carts can barely pass without considerable eneralship, up the sycamore avenue, and so to Mr. ruere's hermitage at Braithwaite. It stands in the midst f a rose-tree prairie, among which white Dorkings, which roved hardier than Spanish, lead a merry sort of life. he three gables, of which the ivy has seisin, were said have been built by three sisters, and they bear the date f 1672. Everything is in keeping with the wide entrance ll and massive stairs, and the low black oak wainscoted rlour, with no emblazonment but "the Booth bull ee" on its walls. Modern taste has crept in with a nall dairy, in whose midst a fountain, of iron and painted ass, plays for shorthorn men. China of many patterns, ith yellow, blue, green, and claret as the ground work, on the shelves, and the new milk is held in dishes of on, coated with pot.

The Coverdale valley lies in front, with the river Cover winding through its deep dingle of ash and sycamore. In the distance is the ridge of the Low Moor, with occasional sheeted strings of racers glancing along its skyline, like the scenes in a magic lantern, and stretching away to the High Moor, which has the frowning Penhill to back it. The old church at Coverham is hard by the Cover stream, and many an old racing celebrity lies under its shadow. There sleep old Bob Johnson, the steersman of Beeswing and Dr. Syntax; Ben Smith, as simple as a young turkey on his mother earth, but a very Talleyrand in the saddle and the winner of six St. Legers; the hapless Harry Grimshaw, of Gladiateur fame, and there, too, old John Osborne now rests his dreamless head. Ashgill, in whose quiet little parlour he used to sit like a wizard, not consulting the stars or perusing the prophets, but weighing handicaps in his good brain balance, is perched high on the hill side. Below it is Tupgill, from which Tomboy and Caccia Piatti used to go forth to clear their pipes in good air; and beyond is Brecon Gill, which is also associated with some of Tom Dawson's best triumphs, of the tartan, and the dark blue, the Johnstone crimson, and the Meiklam stripes.

Mr. Bruere farms about 300 acres under General Wood, and two hundred of muirland. Of the rest, which has been gradually enclosed from the slopes of Braithwaite Fell, only 38 acres is arable, and 12 of them turnip. The blackcocks club within three hundred yards of the house, and, when the wind is in the west, the hill-sides are full of grouse, but an easterly blast drives them further over to Dally Gill Moors or Masham Moor Head. About 150 blackfaced ewes are kept for the heather, and crossed with a blue-faced Leicester. The produce are sold off as lambs and shearling-wethers, the latter of them generally weighing from 20 lbs. to 22 lbs. per quarter, and averaging 6 lbs. per fleece; while the best of the shearling gimmers are kept to make up the ranks of a half-bred flock to 50. The cross invariably knocks the horn out of the gimmers; and those of the wethers which retain their horns are coarser, but make bigger sheep. The white-faced Leicester has never suited the half-bred ewes so well, and his stock never seemed to travel so well through the ling. Mr. Bruere considers that he owes most to a black Leicester, who gave plenty of "japan" to the face and legs, and yet only got four black sheep in the course of his four seasons.

The district is not unknown in shorthorn story. In Mr. Claridge's day there was a nice herd at Jerveaux

Abbey, with Norman, Darius, and Lisbon as its bulls, which were open to the Aylesbury tenantry. He and Mr. Bates held the Daisy or White Rose tribe between them, and each mutually tried to buy out the other in vain. Mr. Scroope, of Danby, had no mean fame. He showed four heifers against four of the late Thomas Booth's (father of the celebrated brothers) for a rump and dozen at Bedale; and, instead of sulking when he was beaten, he at once hired Booth's Young Albion (15). He also bred Miss Scroope, the dam of Rouge, whose infant existence once hung upon a thread. She was thought to be barren, and was being fed off for the poor of the parish, when Mr. Dowthwaite, the steward, begged for her life. "But where's the Christmas beef to come from, Dowthwaite?" said the Squire, who finally granted a reprieve on the receipt of a fat Scot. The Powlett family have used Duke (225), Studley Grange, Protector by Pilot (496), and Nero (from Young Anna by Isaac) (1129)—all of them Booth bulls—at Bolton Hall; and Hartforth, of Colonel Cradock's Cherry tribe, has been a subscription bull among the tenant-farmers in the valley.

Mr. Bruere came to Braithwaite about nineteen years ago, after spending fourteen years at Agglethorpe in Coverdale. His Booth devotion dates back to 1824, when he was a school-lad at Ripon. Mr. Richard Booth used to invite him and his two brothers over to Studley, where those buxom matrons, the red Anna and the roan Isabella, stole his youthful heart. A fine white bull, Young Albion (15), also held him in a spell, and so completely deadened an early longing for Australia, that he settled to farming at Agglethorpe. In 1886 he began a herd with Lily and Damsel, half-sisters by Cleveland (8404), and Lily's dam and Leaf both by Burton (3250), a son of Comet (155), and bred by Mr. Wyville, of Burton Hall. He has gradually formed six tribes from Kate, Damsel, Leaf, Lily, Vesper, and Garnet, and distinguishes them respectively in his nomenclature as "Sweets," "Roses," "Leafs," "Flowers," "Stars," and "Precious Stones." Of the *Kate* sort very few are left. The old cow Kate was bred by Mr. Whitaker, of Otley, and was the dame of Kate by Chance (3329), of the Fairfax blood. Sweetbriar by King Arthur (13110) is her leading descendant; but Silky Laddie (10947), a white bull, with long curly soft hair, did most during his seven years' sojourn to bring out the milk of the tribes. *Leaf* was by Burton (3250) Son of Comet, from Tulip by Chance, who had twins three times; but Lady Pigot bought some of the older females of the tribe, and others went to France and Sweden at good prices. Lavender Leaf by Windsor (14013), the dam of three heifers, is the only old cow left; and strange enough her Rouge (5012) granddam was a free martin.

The first *Damsel* was a good cow, and they used to say of her that at twelve Manchester accepted her as eightpenny heifer beef; and Windsor nicked well with the blood in Windsor Rose Wreath, dam of Rosa Sybella and Sylvia by Baron Booth, and a heifer calf by The Sutler. *Lily Flower* was a very deep butter cow, and this attribute belonged to others of the tribe in a very remarkable degree. The original Vesper by Morning Star with three Booth bulls in her pedigree, and then Mason's Matchem, was a present from Mr. Bruere's mother; and the present Vesper, a tribe upon which he specially builds, has six crosses in her veins of bulls used by Messrs. Booth or inheriting their blood. Three out of her four heifers and her only bull are by Prince George. The latter is Baron Booth, who succeeded Englishman last year in Mr. Barclay's herd, at an outlay of 200 gs. Windsor Star by Windsor is one of the daughters, and her produce Viscount Booth went to Australia for 150 gs.—making the tenth bull which has gone from Braithwaite to the colonies since 1858. She has also had Star of Braithwaite, Venus Star (own sister to Baron Booth), who died last spring, leaving Royal Booth by Count of Windsor, and Vernal Star by Sutler. Morning and Evening Star were twins, and her last offering to Prince George, who, after gaining a settlement on Braithwaite Fell, was sold full of years in Darlington Market, like old Usurer before him. *Garnet*, the latest of the tribes, is a very nice red cow, by Booth's King Arthur (19110), who has so far only bred Ruby by Prince George, Sir David by Baron Booth, and Red Granite, by the Sutler.

Chance, the first bull who came to Agglethorpe, was succeeded by Shipton, from Mr. Edwards', of Market Weighton. Shipton only got one thing (Strawberry) that has left any descendants in the female line, and he went back to Lady Sarah, own sister to Isabella by Pilot. He had also pretty nearly made an end of Mr. Bruere, as he flung him on to some lime-heaps in a lane; and if his cloak had not become unclasped and wound itself round his horns for a few seconds, his victim could not have crept through the hedge. This was our Braithwaite friend's first and "positively last appearance" in the Spanish matadore line of business. After this savage came Rouge, who was purchased from Mr. Dowthwaite, steward to the Scroopes of Danby, and left some wealthy steers and an array of seventeen good milking roans. St. Martin, of mixed Booth, Colling, and Hutton blood, had the next turn; and then came Silky Laddie, for whom Mr. Bruere gave Mr. Topham £5 as a calf, and used him for seven years. The white which claimed descent from John Colling's Rachel (eighteen of which averaged £92 6s. 10d. at his sale in '39) was a great heifer-getter; and Lady Pigot by her purchase of Dahlia and Garland, when they were well on in years, showed that she liked the model. His successor, Sylvan King, was Silky's half-brother, and five bulls by him went to Australia. After him, the pure Booth period set-in with King Arthur, half-brother to Venus de Medicis, who was hired from the late Mr. John Booth for 100 gs. a year. Thirty-two calves, a moiety of them heifers, were the produce of the visit; and, as he had gone home three months before his time, Prince George arrived to finish out the two years, and never left Braithwaite except for the block. Windsor was also kindly lent to Mr. Bruere by Mr. Richard Booth, from May, '60, to February, '61, on his return from Mr. Carr's. Thirteen cows and heifers held to the Royal white, who looked the mere outline of his once great self; and two out of the thirteen cast twins; but three bulls and seven heifers were the produce of the rest. Prince George was rather yellow-red in his colour, and infused a good deal of red with white legs into the stock, as well as his round Booth-rib and soft, well-covered huggins. Baron Booth, from Vesper, was his son, and was used for a time, before his sale to Mr. Barclay, and won a silver mug, between hours, at Bedale, as the best beast in the yard, which was the only piece of plate that Mr. Bruere ever showed for. The present forty females are all by Booth bulls; and The Sutler, by Valasco, from Soldier's Joy, the fourth bull he has had from Warlaby or Killerby, and Royal Booth, have been their true knights this season.

We found some of the cracks on a knoll in the Ox Close and other fields. Windsor Star, with her yearling Star of Braithwaite, by Baron Booth, her Sutler calf Star Queen, and the twins Morning and Evening Star in attendance; and Garnet, with her deep-fleshed Sutler calf, Red Granite, at her side; while Windsor Lilac, Windsor Lavender Leaf, and Windsor Rose Wreath, made up another family trio. There too was Sweetbriar, a famous old cow with a good picture-head by King Arthur—a great cow-getter in her day; and so were *Vesper* and her orphan grand daughter, Vernal Star, on whom Mr. Bruere, both as regards looks and blood, may well rely for a tribe.

Our evening was chiefly spent over the Booth Chart 1790, or "Warlaby, Killerby, and Studley Bradshaw." We had all the more pleasure in helping to prop it on the table, and exciting Mr. Bruere into a lecture thereon, as, according to him, we had the honour of being its sponsor. During a visit to Braithwaite in the Christmas of 'Sixty, we found Mr. Bruere armed with numberless rolls of pedigree papers, which he unfolded upon us to a sea-serpent length. The prospect was appalling, and our spirits sank when we heard that Bates and the Duchesses, on the same principle, would be the programme of the following evening. "Why not pull yourself together," we said, "and combine all this into one chart, on the fashion of the Temperance Allegory, or the Morrison's Pills tree?" So he set to work that very winter. Here was "the self-supporting herd," drawn out, after many a weary night's labour, with pencil and brush, into one vast sheet, bristling with names and dates, and resplendent with the banners of its ten great tribes. The ten flags were each painted into their place, and also grouped at the top, five and five, with the Booth crest—three boars heads, and three drops of blood on them. Under the dedication is the record of the *Anna* tribe, going back through eight generations. Mr. Richard Booth always loved to tell how Anna walked to a Manchester show, and bore a calf afterwards, and how she was such a high grazier, that he had nicked fat with his penknife out of lumps on her side, and preserved it as a curiosity. As between her and Isabella, he always felt, "Let both divide the crown." If you praised the one, he turned on to you with the other. The top is quite a pedigreed Bashan—bulls bred by Booth to the right, and bulls introduced into the herd to the left. Each tribe rests, in its "linked sweetness long drawn out," under its own flag; and the yellow flag is for *Isabella* by Pilot. It waves over a tribe which has been spread very largely over the United Kingdom through the agency of the '84 sale at Studley. The *Nurse* or British Rose tribe is white and blue; and the red flag is devoted to *Bracelet* and *Necklace*. The *Hope* tribe, from which Charity sprang, rests under the Imperial purple; while the *Fairholmes* or *Blossoms*, which originally came from Fairholme in Ainderby parish, make a brave show under the green flag. The *Christon* by Jerry (4097) still flourishes under the cobalt blue, and the sort have always been known as great milkers. Under the orange flag of *Broughton* or *Bliss*, we find Lady Fragrant, "the Plymouth crack." Bride of the Vale another plum, is of the *Vivandière*, or the chocolate tribe, which begins with Dairy Maid by Pilot. The *Halnaby* or *Strawberry* tribe, from which come Red Rose and her "Queens," is ranked under the blue; and the first of the sort, a large yellow-red and white cow, arrived at Warlaby from Halnaby, when Mr. Richard Booth was hardly eight. Such is the merest outline of this remarkable work. May we trust that not many years will pass over our heads ere Mr. Bruere takes down his paint-boxes once more, and begs back the "Booth Bradshaw" from its old nook at Warlaby, for the indulgence of "that stern joy" which writers as well as warriors "feel" of sitting down to grapple with a second edition.

H. H. D.

WINTERING SHEEP IN FOLD-YARDS.

This is a subject of considerable importance at the present season, when so many arable farmers are very properly demurring as to the purchase of cattle to convert their straw into manure. The rinderpest made sad havoc last winter with the fold-yard cattle, and although the danger would appear to be almost over, yet it behoves us to be cautious as to our future course. There is comparatively very little danger of sheep taking the disease; therefore if sheep can be made to perform all the offices of cattle, as manure manufacturers, it would be wise and prudent to use them for such purposes rather than buy cattle, particularly to winter upon those farms where the disease was prevalent in the past year. I am by no means well conversant with the proper mode of wintering sheep in fold-yards, and I take up the subject chiefly with the view to elicit information upon a question of such immediate import. I trust some of the readers of the *Mark Lane Express* will kindly give us their views or experience upon it. In order to induce others to give us the benefit of their knowledge of the subject, I will detail the course I am now pursuing, with the hope of making "a yard of good muck." At harvest day I stacked a considerable quantity of wheat, barley, and peas, in the sheltered corner of a field, conveniently situate for a fold-yard, and near to the turnip and mangold crops. Some of the wheat and barley has been thrashed, and of the straw we have made stacks, arranged so as to form a fold-yard in part, to the north and north-west, the remaining being otherwise fenced in, so that the yard may be roomy and warm. These stacks are fenced from the lambs by sheep trays, through which they receive their straw. The yard thus fenced is about 45 yards by 25 yards. It looks large and roomy, but having about 150 lambs to occupy it, there does not seem much room to spare. Adjoining the yard is a field of thirteen acres of eddish, now partially eaten off, to which they have access daily in fine weather, but are shut into the fold-yard at night and all suitable times. The lambs are ewe-lambs; as I am told the heder lambs, or male sheep of any age, are not well adapted for this order of confinement. It has been the painful experience of many to find that numbers of the males die, while the females at the same time are doing well. The cause is ascertained to be a derangement of the urinary organisation, resulting from a partial or total stoppage of the urinary passages. It appears to be a deposit of sandy or fine gravelly matter in the region of the bladder, which the animal cannot void freely, and in many cases it so accumulates as to cause death. This being the fact, we take the liberty to urge upon all flock-masters who contemplate using sheep for fold-yard service, that they alone use the ewe flock, as being by far the safest course. I am told that guile ewes fatten admirably in these yards—that breeding ewes and lambs are doubtful. On this point I have no personal experience, and, as it is highly important, it forms an additional reason for desiring the best information from those who have adopted the practice of wintering sheep in fold-yards: it will confer a favour upon the writer, and be of great benefit and interest to the public.

My lambs are thus managed: They have at present three rations per day of sliced turnips, by Gardner's cutter. This is their principal food. The tops are taken off and are led on to the old eddish, where the lambs go and pick them up freely, which greatly tends to their safe and healthy growth; for it must always be borne in mind that it is the constituent parts of the *turnip-top* that is so conducive to the production of bone positively, and of muscle in a great degree. Lambs fed upon turnips only, without leaf or top, are very liable to turn rickety, and many will do so unless some artificial food is supplied to counteract that tendency—such as oats, bran, beans, peas, &c. If the season is cold and the turnips are wet, and likely to cause scouring, their artificial food consists of cotton cake; but if all goes right, linseed-cake and bran, mixed with oat chaff, are given, and is the better food and most valuable; but it is given in limited quantity. Of straw they have an unlimited amount, in fact all they can obtain from the stacks supplied through the trays by which their yard is fenced, besides a daily sprinkling over their lairage, some of which they consume.

With respect to lairage, I have had a large experience, and have invariably found that it is absolutely requisite to keep it comparatively dry and free from fermentation, or it is fatal to the sheep's feet. In order to prevent this, a small cartload of soil, ashes, loam, or earthy matter should be sprinkled over the fold-yard as often as in the flockmaster's judgment it may be necessary. This will retard fermentation to such an extent that but little injury to their feet will ensue, and when the fold-yard is turned over in the spring prior to leading out to the field, it will be found to make a profitable addition to the heap, and form a highly valuable compost for the crop. It may appear objectionable to permit the lambs to range over the field of over-eaten eddish, however conducive to their growth and welfare. In many respects it is so, because some of the lambs will prefer the grass to the turnips, and are continually searching for every pleasant blade to eat. When we find these incorrigible animals so determined, they are taken into a compartment of the yard which we appropriate for the weaker lambs, and are there confined entirely for a time to their winter food. I should have observed that a separate yard should always be made in which the weak and ailing lambs could always be fed. This is no doubt customary in all well-managed flocks, or the stronger sheep will secure to themselves the best and largest amount of the food, to the almost certain destruction of their weaker fellows. Of course these weaker lambs require especial attention, and a regular supply of the cleanest and best roots, as well as the most tempting of artificial aids—*i. e.*, linseed-cake, oats, maltcoomb, hay, and oat-chaff, bran mixed with a little barley-meal, and all in moderation, never to be cloyed. Tender stomachs require tender nursing. It is also desirable that salt be accessible to all, and water in limited quantity, in accordance with weight of roots given. If the turnips are fresh from the field and contain much moisture, scarcely any water is required by the general flock; but there are always some individual animals of a feverish turn in the fold—for them it is requisite. As the winter proceeds, and should the weather become frosty and inclement, I propose to confine the lambs altogether in the fold-yard, the difficulty being to keep them healthy under such confinement, and breathing a somewhat noxious air, which cannot fail to rise from their lairage, however careful and provident we may be. To aid in this way, I propose to give them a diuretic drink occasionally, or, should colds and scourings be observant, gruel containing chalk and laudanum to those animals requiring it. The manure thus obtained, I am told, is usually long, and not well made, as so little of the straw is consumed and a much larger quantity is required for lairage than for cattle. This may easily be rectified, either by cutting the straw into long chaff before spreading, or in small squares from the stack; or when the manure is turned over or carted out, it might be also cut into suitable squares or lengths for mixing and fermentation. This is a minor matter providing good manure can be made by sheep, it may readily be got over.

I wish some of my readers would give us information upon these matters. I want to know what effect this order of management has upon the wool? Will the particles of straw work injuriously into the fleece? Will the lambs grow and thrive in this confinement? Should older sheep be substituted for the lamb flock? Would it be best to divide the flocks into two equal numbers, and place them in alternate confinement—*i. e.*, in the yard and the field for a period? Can any course be pointed out to make male sheep available for this management? Will the lambs abide such confinement? What wrongs or injuries are likely to arise to mar the experiment? P. F.

MILK FEVER IN COWS.

The following paper was recently read before the Lancashire Veterinary Medical Association, by Mr. G. BROWN, Veterinary Surgeon, of Oldham.

Mr. President and Gentlemen,—Immersed in the all-absorbing duties of my profession, I find little time for study and scientific research, and I feel that the subject I am about to treat upon must suffer as a necessary consequence; yet the practical lessons I intend to bring before you I trust will not prove entirely valueless. It may be thought by some that it is superfluous on my part to introduce the subject of our consideration to-night, as once since the commencement of our association it has been brought before us; but I am of opinion the subject on that occasion was by no means exhausted, and that there still remains a vast field for us to explore.

From my earliest connection with veterinary science it has been a matter of regret to me that, generally speaking, the attention of our brightest luminaries is exclusively devoted to the diseases affecting our noble steeds, almost ignoring those to which our cattle are exposed. But I would not have you for a moment entertain the idea that I would disparage the merits of the horse, or that I would exalt the ox at his expense, for I am second to none in my admiration of him; his splendid figure, exquisite symmetry, and noble qualities, endear him to every lover of the beautiful, and I should be extremely sorry to see him the subject of neglect by the profession with which I am identified, but I want to see the talents and energies of my brethren directed also to the scientific treatment of bovine animals whilst suffering from disease. And when this is done, when we are as familiar with the sufferings of cattle as of horses, we shall have done more towards advancing our professional status than the new Veterinary Bill is ever calculated to do for that object, for I am of opinion that success, whether viewed in its personal or general aspect, whether applied to us as individuals or to us as a body, depends more upon individual efforts than outward circumstances or legislative enactments. If we, as a profession, wish to rise, we may do so; and one mean towards that desirable end is bringing our talent and energies to bear upon the diseases affecting our cattle. And amidst all those direful disasters none stand forth more prominent than those consequent on parturition. It is true rinderpest may come as a whirlwind, sweeping away with its almost irresistible besom myriads of noble animals from our pastures and farmsteads, bringing men of opulence to the verge of bankruptcy. Pleuro-pneumonia, like a blight, may blast our flocks and herds, ruining our noble yeomen; but the foe we have met to combat is almost as deadly as they are. But we are about to ascertain his weak positions, to attack him in his strongholds, to mine and countermine his works, to unmask his batteries, and to learn how to unfurl the flag of health where disease and sickness abound. We are met to achieve a victory, and to gather fresh laurels to adorn the temple of science; for we shall have met to little purpose unless we go away better prepared to assuage the sufferings of animals little inferior to ourselves.

The highest paths of science are those which the medical man walks in, the choicest flowers that grow in her garden are culled by him, and the goal to which he is running is one of the noblest open to mankind. His office is not to spread terror and desolation upon myriads of our race, sowing sickness and fell disease broadcast, in the vain pursuit of glory and conquest, but to spread happiness where misery abounds, to alleviate physical suffering, and to impart strength and vigour to a weakened and relaxed system.

This, gentlemen, is the object we have in view, and allow me to say it stands before the world in a garb of unsullied purity and peerless excellence; the empty struggle after fame and popularity have little effect upon us—ours is a far nobler pursuit.

Yet, notwithstanding that many of the arts and sciences with which our world is adorned receive the homage of mankind, the merits of our own noble profession are very much overlooked. The poet, who, for moving our passions, shines upon the pages of history when all his mortal part has returned to mother earth; the painter, who strikes the eye and fills the mind with beauty, with his blending of shades and artistic touches, inherits a deathless fame; and the sculptor, who with his chisel imitates some of the world's celebrities, feasts upon the applause of the greatest and noblest of men; but we labour on silently and unobtrusively, our efforts being very much overlooked, although we confer immense benefits all around. But the time is coming when we shall stand upon a loftier pedestal than those we might envy now, and the world will esteem us in proportion to the benefit it has received from us.

I have stated that diseases consequent on parturition are not only frequent, but very fatal, and our own country suffers immense losses every year in consequence. Having two appointments as cattle inspector, one in Lancashire and the other in Yorkshire, I have been able to collect statistics, and make some calculations which otherwise I should have been unable to do; and I find that fully 2 per cent. of the entire stock of cattle have died of parturient apoplexy and paralysis alone in one year. Now, if this is a fair average, the appalling fact stares us in the face, that in fifty years stock equal in number and value to the entire stock now existing in this country is swept away by these diseases alone (for very few cases recover that are attended by the ordinary "cow doctor"); and yet, in my opinion, the majority, if properly treated, would be restored. But before entering upon the treatment of parturient apopxley, or milk fever, I beg to trespass a little further upon your attention, and make a few preliminary observations as to predisposing causes. The attention of the agriculturist in the rearing of cattle is mainly directed to two distinct objects, viz., the production of fat and milk, and he breeds from those animals that are remarkable for possessing these qualities in an eminent degree. In accomplishing these ends, however, health and vigour are to a great extent sacrificed; for do we not find that our obese, well-bred, heavy-milking, Shorthorn cows are most likely to suffer from diseases consequent on calving?

Another predisposing cause is the artificial mode of management to which they are subject, especially in this and surrounding districts. Cows are kept in shippens badly drained and still worse ventilated, during two-thirds of the year without exercise, supplied with rich stimulating food, and breathing an atmosphere in the depth of winter equal to the height of summer in point of temperature. When we reflect upon the subject, is it any wonder that so many fall a prey to diseases of every kind? This system certainly tends to the production of fat and milk, but at what a sacrifice! The vitality of the stock is lowered, the power to ward off disease becomes feebler, and the future offspring is likely to become weak, debilitated, and deteriorated. The exciting causes are the changes that take place in the system at the period of parturition. There has been a vast amount of nervous force expended in supplying energy and vitality to the fœtus, and during labour another heavy call upon the exchequer has been made, sadly diminishing the funds. The mammary gland is kept in a state of constant excitement by milking every three or four hours; these continual drains bring about a state of bankruptcy, and the poor animal succumbs to what is popularly termed milk-fever. But nature, like a clever financier, when the demand has been excessive and the supply exhausted, commences a system of retrenchment by suspending some of the vital functions. The sight, hearing, the power of deglutition, are gone, the bowels become constipated, rumination arrested, and the secretion of milk suspended. Now, it appears to me that these symptoms point to one common centre, viz., an exhaustion of nervous force, implicating the cerebral, spinal, and ganglionic systems. The *post-mortem* appearances also lead us to the same conclusion. The evidence is of a two-fold character, and may be designated positive and negative; the positive evidence includes the impaction of the omasum with hard and dry ingesta, congestive appearance of the vessels at the base of the brain, likewise on that portion of the cord we find situated in the lumber regions, and I have frequently found petechial spots on the outer and central portions of the heart, likewise on those parts of the endocardium situated round the auricular and ventricular openings.

The negative evidence is the absence of disease in the other vital organs, viz., the lungs, liver, bowels, kidneys, &c. The stomach is hard and dry because there is not sufficient nervous force to carry on its functions, the bowels constipated because there is not sufficient power to carry on the peristaltic action; and the suspension of the secretion of milk, and the congestive appearance of the heart, are due to the same cause.

Treatment.—There are various modes of attaining an end, and in no cases that we are called upon to attend is the principle better illustrated than those under consideration this evening, obviously for this reason—that the nature of the disease is not yet well understood. Many practitioners have recourse to that empirical panacea for all the "ills that flesh is heir to," viz., bleeding and purging; but if my theory be correct, that mode must be injudicious and unscientific, and, as far as my observation goes, very unsuccessful. It must be injudicious because inexpedient; and unscientific, because the vital forces are already too low, and this method must lower them still more, and I can only compare it to accelerating the gushing cataract or increasing the velocity of a rolling avalanche. Narcotics have been recommended, and sedatives likewise, and it would be a mere waste of time to enumerate every agent that has been advocated; but, amidst them all, aconite, camphor, digitalis, opium, and belladonna stand conspicuous; but I cannot see the propriety of employing these and similar agents unless we endorse the homœopathic theory, "*similia similibus curantur*." Cold wet sheets have been recommended also, with the view of setting up a fresh action in the system and causing perspiration. The mere fact of opening the perspiratosy tubes will only relax the system without imparting vigour or restoring the vital functions. I would here make a passing remark, that I think it a desirable object to cause perspiration, but it is of absolute importance that tone and vigour should be imparted at the same time.

A friend of mine once stated to me in conversation that upon being called upon to attend these cases he invariably carried a treacle can in his gig, and gave in the first instance twelve or fourteen pounds of the contents, and was frequently successful; but the treacle can only act as an aperient, and I am convinced that the opening of the bowels should not be the primary object. If a stone of treacle can cure the disease, publish it to the world at once, for the farmer is quite as equal to the emergency as the scientific practitioner; but I feel persuaded that the methods I have glanced at savour too much of empiricism for any around me to have recourse to them. I will not say that cases thus treated do not occasionally recover, but it is in spite of, and not in consequence of, treatment. A veterinary surgeon of considerable cattle-practice said to me, in speaking of these cases, the primary object is to open the bowels; in order to do this, give strong drastic purges; assault the stomach, as the fortress you mean to take, with one discharge of heavy artillery, and follow up by smaller and repeated charges. Give a drachm of croton seeds, in powder, combined with aloes and sulphate of magnesia; and then give smaller, say scruple doses, every two or three hours, until the bowels have responded; then pour in stimulants. I have tried this system, and have succeeded in opening the bowels; but, immediately after, my patient has retired from the stage, and gone beyond the reach of croton or stimulants either. We often make mistakes in doing too much. That desperate cases require desperate remedies is the article of belief of many; but a greater fallacy was never propagated, especially as applied to medicine; that principle carried out has filled many a cemetery as well as the knacker's yard. It should be our aim to follow the dictates of Nature, for in pursuing the course which she directs we shall most assuredly do right. We frequently want to drive our bark against wind and tide; but our duty is merely to sit at the helm and steer the vessel, whilst Nature stiffens our canvas and bears us into port.

In order to avoid the quicksands and rocks to which our own rashness would lead us in the treatment of this disease, let us first make our patient as comfortable as possible. In all probability she is lying in a narrow stall, scarcely sufficient room to move in—widen it. She is, perhaps, lying flat on one side—pack her up nicely, and let her rest on her abdomen, with all four of her legs under the abdomen to serve as pillars of support, while the whole of the body is a little inclined to one side. If she shows a preference to either side, indulge her, but do not allow her to remain many hours without turning; pack her up with hay, tightly stuffed in bags: you will find this far preferable to loose or even tied straw, not so liable to derangement, and much firmer; well stimulate the whole course of the spinal cord extending from the dorsal to the lumbar and sacral regions, and down the course of the femoral nerves. A liniment that I find very efficacious for this purpose is prepared as follows: Two fluid ounces of the tinct. crotoni, with six fluid ounces of rape oil, but it is important that it be well rubbed in, and repeated several times. Give at the outset a good stimulating draught, and nothing is better than a pint of good whiskey in a quart of water; but see that the cow gets it. The mode of administering the draught is not by any means an unimportant feature in the treatment: it should be given in a wide-bottle, for two reasons—it is not so likely to disturb the animal, as it can be inserted in the side of, without opening, the mouth, and, from its gently flowing down, is not so liable to cause choking. Afterwards, give small doses of carb. ammon. with a little sulph. mag.—a drachm of the first and two ounces of the latter; this may be given every three or four hours. In some cases very small doses of belladonna may be given with advantage, but take care not to push your belladonna too far, or give it at all unless the breathing is extremely heavy or there is evidence of strong uterine pains. Give linseed gruel, with a little treacle in it, frequently. Take care the attendant is not continually drawing the teats. Give half a pint of whiskey every four hours, until your patient begins to rally, then give it less frequently. After the bowels have moved withhold the sulphate of magnesia, but continue the carbonate of ammonia, blended with some aromatic or gentle tonic. Now give mashes of bran, a little green meat, carrots, or anything of a succulent or easily digestible character. The treatment may therefore be summed up in a few words. Make your patient as comfortable as possible, stimulate the whole course of the spinal cord, and repeat it; administer stimulants internally, blending them occasionally with a little aperient or a very small dose of sedative occasionally, according to circumstances; remembering the primary object is not to move the bowels, but to arouse the vital forces by stimulating the nervous centres. When this is done the bowels will generally move without having recourse to cathartic agents. Do not leave off your stimulants until your patient is fairly on her legs. But it will sometimes happen that, although the beast is convalescent, bowels in a nice healthy condition, the milk secreted in fair quautities, appetite returning, and rumination natural, she will sometimes lie for three or four days, making little effort to rise. Under these circumstances I would use blocks, but I am always very careful in having recourse to coercive measures; in fact, it is always with me a *dernier ressort*. I am sorry that my register of these cases and the result only dates from the commencement of the present year, but I can speak with confidence of the system of treatment I have recommended, for the nearer I have approached it the more successful I have been; and let me assure you that it is no wild chimera that I ask you to adopt, but a system I have tried most patiently and perseveringly. During the present year I have kept a record of the cases I have been called upon to treat, and I find in the six months ending June that I have attended thirteen cases of decided parturient apoplexy. In nine cases I have been successful, two became affected with paraplegia and were subsequently slaughtered, one died of uterine haemorrhage, and the other was killed almost immediately after I saw it. With regard to these cases of paraplegia, I have no doubt upon my own mind that had they received proper attention from the parties in charge of them they would have recovered also. When this has been my success, I think I am justified in introducing the system to the notice of the profession, believing that if it is fairly carried out, another dark cloud will be dispersed from the horizon; for although we cannot hope to succeed in every case, yet such results will follow this course of treatment as veterinary science has never witnessed, for I am persuaded that no method for the treatment of these diseases that has ever been given to the world, approaches the stimulating system in point of value. But do not think for a moment that I imagine that I have succeeded in fixing the top stone in the temple of science, and that the whole building is now perfect and complete. I am not so vain; the foundation is laid, and some parts of the building already begin to appear, and if we to-night only fix one stone in the temple our labour will have produced its fruit. And now, gentlemen, I sincerely thank you for listening to my essay, and trust that from the conversation that may ensue some valuable remarks may be elicited that may grace the archives of our noble profession, and add a lustre to our diadem, which shall exist as long as time shall be.

AGRICULTURE IN 1866.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

There are in all ages general states of society which react upon the condition of all branches of industry, and which determine what we may designate as the great tide of ideas respecting labour and capital. In our day it is evident that this condition exists in the immense increase in labour and in personal property. Our continual revolutions had thrown us behindhand in public works and in industrial labour. By a strenuous effort we have striven to make up for lost time. The science of taxation and loans has made wonderful progress. The public credit is firmly established, and, with confidence, capital is obtainable. The spirit of association as well as individual enterprize has been energetically at work. In short, we have, so to speak, improvised railroads, canals, roads, and ports. And, if it is true that personal credit amounting to twenty thousand millions of francs has thus been created in a few years, it must be granted that it was difficult to give such a direction to the savings of the people without causing for the moment a violent reaction against agriculture and landed property. Strange language has been held. Agriculture, it is said, is no longer an employment for wealthy and educated people; it is a plebeian occupation, in which only those can succeed who water the earth with their sweat. Do you possess capital? Have you genius for invention, science for discovery, talent for organization, or administration? Seek for fortune and honour from industry; it will give them abundantly. Do you prefer an easy return for your capital? Acquire personal property, subscribe to all the public loans, interest yourself in the transactions on Change, speculate in town lands, anticipate future railway-cuttings, build houses on the new boulevards, and money will flow in almost without effort, and you will possess a fortune, easy to keep, to remove, and to trade in promptly.

Thus have said, and still say, the partizans of personal property; and it is certain that latterly everything has tended to give force to their words. Population and capital have been attracted to the large towns—above all to Paris. Agriculture, deprived of capital and labour, has uttered a cry of distress. Everything had seemed to prosper around it. But, strange to say, abundant harvests were gathered; and this very abundance—the predominant cause of low prices—nearly produced ruin. It must be confessed it is an interesting economic phenomenon manifested by the uneasiness of the growers in the midst of abundant harvests. At all times they have been desired; they have been spoken of as the joy of the grower and the consumer. That would be indeed a sad state of civilization, in which the farmers, having interests alien to those of the consumers, should direct their efforts to keep down the supply, in order to avoid low prices. Such is not our future. The farmers will always make the most praiseworthy efforts to increase production; but just now it is an act of wise foresight to wait until the energies of the country, momentarily engaged in the direction of personal property, shall recover the proper balance which assigns to France its true character of an essentially agricultural population, self-nourished, and producing a surplus for exportation. Large speculations in personal property can be only temporary. It will all find its level sooner or later; and if, as often happens, good springs out of evil, there are many reasons at the present time for hoping that agriculture will have its turn of prosperity.

1. And first of all, what is our agriculture? What are its weak sides? What its means of action? What its tendencies?

Being now in a state of transition, French agriculture is evidently passing from corn crops and fallow to corn crops and fodder. There is an increase in the number of hectares under cultivation as well as in the number of animals; and, what is still better, the return per hectare is augmented, as well as the weight, quality, and value of each head of cattle. The lands are better manured, and the animals better fed; the implements are improved, and the motive powers of the farm are more skilfully worked.

In the foremost rank are the exceptional agriculturists, who obtain from 25 to 35 hectolitres of corn per hectare, and who pass through the crisis to which all industry is liable, the more easily because they work upon improved lands, possess capital, unite the production of corn with that of fodder, of plants used in various branches of manufacture, and of cattle, and, consequently, ought, from the abundance, the variety, and security of their produce, to suffer least from atmospheric and commercial changes. In the rear are the agriculturists who reap, in ordinary years, from 8 to 10 hectolitres of wheat, if not of barley, per hectare, and who find themselves constantly in a position the more precarious and the more influenced by the seasons and the markets, because they work upon poor land, have less capital at their disposal, are often obliged to sell at any price, and confine their speculations to a limited produce, having to encounter the same chances of temperature and of commercial fluctuations. Between these extremes are the agriculturists with average harvests, who in the north adopt the three-course rotation of crops, the two-course in the south.

We find from the official statistics that, upon a total extent of 6,984,772 hectares producing wheat in France, 2,696,676 hectares situated in the north yield an average harvest of 1,620 litres per hectare (43,686,151 hectolitres altogether), whilst 4,288,096 hectares lying principallly in the centre and south, and forming two-thirds of the land sown with corn, only yield 1,164 litres on an average (49,913,437 hectolitres altogether). Consequently, there is no doubt that the cultivation with small or moderate crops is that which is used on most of the land, in spite of our progress. But everything shows us that we are reaching the period when agriculturists growing small or moderate crops will cease to hold the first rank in our rural economy. Let us look to the present time. There exists several systems of cultivation in France. It is not uninteresting to see how each fixes its price, disposes of its working powers, overcomes difficulties, and finally accepts or repudiates progress. The rich and poor agriculturists cannot expect the same degree of success. Both may be guided by common economic laws, nevertheless each class has special laws, which the sound sense of the farmers have tacitly accepted, if not formerly endorsed. Let us examine them, for analysis is an excellent thing in rural economy as well as elsewhere.

2. The rich agriculturists, those with large crops, purpose justly to lower prices, by using capital to the limit necessary for obtaining special harvests. In agricultural language special harvests are those, that without any other process than that of growth in the open fields, give the following yields per hectare:—Wheat 30 to 40 hectolitres; beet root, 60,000 to 100,000 kilos. of roots; clover, 5,000 to 6,000 kilos. of dry fodder, and so on for the other crops.

For these special harvests, it is not the number of hectares which constitutes the importance and prosperity of a grain farm: it is the amount of capital well employed upon each hectare. In this high farming, when the best material is employed with the highest results, the formula of formulas is, that the more capital is expended per hectare, the less is spent per hectolitre or per quintal harvested. An improving capital of from 1,000 to 1,200 francs per hectare is at present employed where high farming is adopted, one head of cattle per hectare also being reckoned. We can easily understand that such farming is quite necessary in that part of the country, in which, under the influence of ready means of communication, the hectare of land represents a rental of from 100 to 150 francs, and a value as property of from 4,000 to 6,000 francs. Here is no choice. The situation is very valuable; extreme competition has raised prices. An agriculture, almost resembling gardening, can only prosper by raising the largest amount of gross produce; small crops would ruin it. The soil must be manured and worked to the highest point to obtain the maximum of net produce. Now, the intensity, the energy of working, constitutes what is called *intensive*, in opposition to *extensive*, culture, which latter spreads itself over the soil in large surfaces.

The profitableness of large crops will depend especially upon much and cheap manure. Consequently, bearing in mind, at the same time, the assistance to be derived from the manufacturing manure, we must admit that the future of agriculture depends upon the cultivation of fodder, and all such substances as contribute directly to the production of compost. It is in this way that English agriculture has expanded. It had adopted this maxim—"Corn through cattle;" and this maxim was good, for the more cattle England has fattened, the more men she has fed. The prosperity of French agriculture must, in great measure, be derived from the same sources. Cattle, converted into food-plants, with a brisk sale, will, above all, contribute to keep down prices in agricultural produce. For this reason, we ought to desire the increase of the manufacturing population, as they contribute greatly to the increase of the outlets for the sale of food-plants. For the same reason also, we ought to insist upon a great reduction, if not total suppression, of the octroi duties, which are levied upon cattle on their entrance into the towns, especially in Paris. These dues limit a consumption which would tend to the increase of manure; and this, in the present state of general agricultural commerce, is, in a country of high civilization, a question of extinction or prosperity.

We must keep in sight that it is desirable to have cheap manure for another reason. High-farming has created two splendid branches of rural manufacture, both taking beetroot as their material, but the one for alcohol, and the other for sugar. Unhappily, sugar and alcohol have been treated as manufacturing produce by the Exchequer—not as produce calculated to lower the price of manure. The Exchequer has given a blow indirectly to substances essentially agricultural, and that at a time when the great principle of financial administration is, that it is good policy to charge the lowest possible dues upon all raw material. The heavy tax upon beetroot is a great obstacle to the progress of high farming, that is to say, to the farming which, under the system of free-trade, allows even the countries which are behindhand to produce abundance of corn and food-plants. But there are other reforms allied with this; commercial reform involves financial reform. Our whole system of taxation was formed under an agricultural *régime* which held manure in little estimation. This must be changed, now that manure is the principal agent in cheap production.

High farming is, then, especially to be desired, but with the understanding that it does not disturb the needful balance between production, consumption, and exportation. Within certain limits, which France has not yet attained, it has immense advantages: it has not only abundant harvests resulting from land well cultivated and manured—it has security and variety of produce; its chances of success are more numerous; it has always in comparison with other systems of agriculture some speculations which will compensate for the unsuccessful ones. It is needless to particularise its intelligence, its capital, its number of workers. It is to this system that the famous Mathieu de Dombasle alluded, when he wrote the first lines of the "Annales de Roville," and declared that France well cultivated might feed a hundred million inhabitants with more comfort than it now does thirty-five million.

3. Farming on a small scale has its own special way of looking at the financial problem. Differing greatly from high farming, it principally founds the reduction of the return prices upon a small outlay, the payment of ordinary expenses, the consumption of its produce on the farm, the labour of the heads of the household and their family by metayage or at least petty farming, the waste lands feeding their beasts, and the privations borne by a class accustomed to the state of life against which our generation protests.

Were there no other warning than that of the emigration of the young country-people, it would be a subject for serious consideration. However highly pastoral poetry may extol the delights of the cottage, there is a stern reality which annihilates these exaggerations of dreamland—it is, that in many rustic families the parents themselves advise their children to relinquish the occupation. Surely they must have suffered much before they would recommend their kindred to abandon their country. All the worst evils of French agriculture are here exhibited. The economist finds monotonous villages, huts almost disgusting, the lanes encumbered with dung, the streams receiving the drainage; the inhabitants living on rye or buckwheat bread, never tasting butcher's meat; suffering from fever, scarce able to answer to the conscription, or to pay petty taxes, and nevertheless giving more to the State than they receive.

Under these conditions it is not wonderful that the question of a return price should be unknown to the cultivator. With scarcely any means of communication, the produce is consumed on the spot. Labour is only profitable by its results; and, as the results are small, it is not worth entering the lists. These sorrowful growers are also the sorrowful consumers; and it is evident that could their condition be improved, and their means of work and subsistence increased, a great market for agricultural and industrial produce would be opened. Low-farming is only a *pis aller*. Having arisen from general circumstances, with a change in those circumstances it would also be modified.

We have frequently spoken of the influence exercised upon the systems of cultivation by the relative price of soil, of labour, and of capital. Nowhere does this influence appear in stronger colours than in the domain of the petty farmer. Small farms and *métairies* still exist; but the farmers and *métayers* have only their labour as the means of improvement. All their fortune is in their arms. Some very poor implements, perchance a few lean beasts leased out—such is their capital. They are obliged to take land at a low rent, or to share the produce with the owner. Why should they borrow capital when they can only obtain it at a high rate, and with short time allowed for repayment?

We must show these farmers their false position. They have a calculation peculiar to themselves. Land being plentiful, and capital scarce, relying upon their labour they take the land they can most easily obtain. In this way the small-capital farmers spread themselves over the soil, and obtain a struggling existence. Such are their means, and such is their system of cultivation.

With the opening of roads and markets for these parts, disinherited by the Budget, their agricultural aspect will change. A balance more favourable to good cultivation will be established between the price of labour, of soil, and of capital; and this latter agent, being liberally diffused in rural economy, will lead to energy, wealth, and a more expansive life. Then agriculture will supply the newly-opened market. At the same time, these isolated territories will be enriched, and the commercial radii will be increased in all those wealthy countries which so often are cumbered with produce while others at a few leagues' distance, in France itself, are districts given up to misery and privation.

But let not the small farmers deceive themselves. One of their mistakes is, that they take too much land, and scatter too widely their manure, motive-power, labour, and grain. They confine themselves too much to grain-produce, and do not grow cattle. But in the present day they will not be able to make as much as they have done in the past, with half-produce: far from it. The day of railroads is that of quick returns. Wheat at ten hectolitres the hectare is out of the question. In proportion as a population is devoid of the first necessaries of well-being, it is unable to pay the working of the land and labour. The poor districts must be otherwise employed. It is on poor land that it is the worst economy to fritter away labour. Here, all that is not good arable land should be converted into wood. The more trees grown, the better; and the working-surface of the land must be limited to the good soils. An agricultural revolution is at work in this respect. This will end the waste of human labour, and we shall no longer see the singular spectacle of the want of labourers on the best lands, while millions of miserably-paid workers are wearing out their lives on millions of hectares of poor land.

4. The growers of moderate crops have adopted some of the truths and some of the errors of a middle position. On the one hand, they are less sparing of expense than the small growers; on the other, they do not venture to expend as much as the large growers. They distrust their strength. The same extent of land which was formerly cultivated on the system of fallows, they now work on the system of perpetual crops. This is their weak side. The desire of possessing large territories is their ruin. They do not admit that the capital expended upon each hectolitre is important. What they desire is, a wide extent of land, without having sufficient capital to produce adequate returns.

Formerly the moderate growers kept strictly to the two-course and three-course rotation of crops; now it has a marked tendency towards growing fodder, and there are many instances in which alternating crops are grown. In this case we often see the most orthodox rotation of crops: the physiological theory of the succession of crops and the theory of the sympathy and antipathy of plants are respected; but, as it is difficult to enter at once upon operating with manure upon a large scale, they begin by using it moderately, which, of course, produces moderate crops; these crops seldom repay upon lands which have to be made almost piece-meal by the use of lime, by draining and subsoiling, and all this without injuring the roads and buildings. It is in truth a difficult problem to solve, that of paying off large loans with moderate crops, and yet it seems that many improving farmers have undertaken to seek for this philosopher's stone. They look upon certain rotation crops as the highest expression of agricultural progress, so that their first care at starting is to divide their land into portions on which alternate regularly corn and fodder crops. They are very particular in adhering to the famous formula of plants hoed and manured. The first time they will use manure moderately, at the rate of twenty thousand kilos. the hectare; but the second time they will increase the quantity, and the third time again increase it. Time is of no importance to this ambition. They only see the probable increase of crops, cattle, and manure: what they do not see is the accumulation of interest, mortgages, and bad debts. They do not see, for example, how much is the cost of a crop of from 15,000 to 20,000 kilos. of beet-root per hectare, on which has been expended a wealth of labour and operations of all kinds, without having a manure which would produce such crops as will authorise the sacrifices; everything is thus fettered: beet-root at high net cost results in high-priced manure, and this leads to dear crops.

This is not the principle of improved cultivation. The first principle is, that high-farming needs easily attained manures. The dissipation of resources is an agricultural heresy. What is needful is the concentration of energy, the saturation of the soil by manure and labour; and when small farming does succeed, it is because, being limited as to land, it is forced only to undertake what it can really manage. We must not endeavour to release extensive farming from this law: the more it is accepted the greater the profit it will make on the production of plants which require a certain amount of labour. Divide, if you wish, your domain into patches; but before you decide how many hectares to plant with roots, reckon how much manure you have; if you are ill-supplied with it, you will plant a larger space with roots than will produce a good crop, knowing that in high-farming the profits and the crops are in proportion to the cheapness of manures. You will grow roots, not on all your land if you cannot manure it highly, but upon that part of it on which you are sure of a good crop; as to the rest of the land, grasses, pastures, and even a bare fallow. Then in the second rotation there will certainly be a full extent for roots. Let us observe that a hectare, on a good state of manure and cultivation, can produce as much, and with more certainty and profit, than two hectares treated on a smaller scale. Having this sound idea, you will not make the mistake of dissipating your resources, so as to suffer from the evil results of moderate crops. Our agriculturists are too much inclined to work upon a small scale. They ought to understand that in agriculture, as in war, the strongest is not always he who occupies the most ground, but he who can concentrate his strength.

There are no farms, however large they may be, on which this principle of concentration cannot be carried out. The best plan would be for the gentleman-farmers to dispose of their surplus land, while the farmers should only rent lands proportionate to their capital. But this radical improvement would be difficult to realize in countries where the parcelling-out has not yet taken place. The nature of things, nevertheless, tends that way. Meanwhile there is another way of solving the problem of the proportion of land to capital: this is, to adopt upon the same farm several systems of cultivation; to multiply natural and artificial pastures; in one word, to reduce the area of the working-surface. In this respect the medium agriculture is under the same circumstances as the small farming: it is only the proportions which vary. With the system of concentration an agricultural basis is established of fodder and cattle. It is enough to say that this is a question of markets. In this respect it is no exaggeration to assert that the rural economy of France approaches a period in which the consumption and exportation of animal produce will hold the first rank. The French growers must get as good a profit from cattle as from corn before they will take up the system of high manuring in earnest. Whilst the latter constituted a lucrative speculation, it predominated to the distribution of crops. To promote the cultivation of fodder, it is essential that the production of cattle should be as profitable as in England, either directly or through the abundance of manure, which it includes. Now the difficulty is this: We have reached the stage at which the production of artificial fodder, consumed at first hand—that is to say, without being converted into industrial produce, such as sugar and alcohol—will not admit of our obtaining manure at such a net cost as shall be proportionate to the selling price of corn. In vain have many willing spirits striven against this law of facts. The problem still remains unsolved with the great body of growers, how to discharge with moderate crops the expense of the farm with the addition of interest on loans. Two things may be deduced: The one is the reduction of the working surface; the other, the need for a stock of animal manure. Everything which leads astray from these two subjects is contrary to the chief interests of French agriculture.

No doubt the landed and agricultural credit can bring an amount of capital which will materially assist the work of transformation. But we must not forget that the concentration of capital upon a surface made more productive would also be an excellent way of preserving the balance between land and capital; while the introduction of too much foreign capital might expose the growers to the danger of too few consumers for a superabundant supply. This must be seriously considered. Given the agricultural capital of France, the problem in most parts of the country would be, not to bring into cultivation all the available land, and thus increase the working capital, but rather to leave out of active cultivation all the lands which cannot be profitably worked. We should also lay out in wood and grass a great deal of land now half-cultivated; and it is certain that our agricultural capital would work the better for being in accordance with the different systems of cultivation. But we have not yet reached this point of perfection; hence the fault in our economic system. In a country where the good sense of the people has long pronounced that *Qui trop embrasse, mal étreint* (He who grasps too much, holds loosely), it is not to be supposed that our old system of dissipating agricultural resources can stand out against the new system, in which the increasing price of land and labour calls loudly for high farming for wheat.

The competition now going on between the different branches of agriculture is not the only cause for these rural crises. Within the same boundaries live two agricultural classes, the one working scientifically and paying money for rent, taxes, wages, manure, and expenses of all kinds; the other, treating agriculture as an unskilled business, inflicting upon themselves, their cattle, and the land, privation of every kind.

It is difficult to find out the net return price in these two extremes, or rather to find the limits of the prices at which each of these classes can offer their produce. However, it is certain that in a state of things in which low farming so much preponderates over high farming, the price of agricultural produce must to a great extent depend upon the weather. High farming has, indeed, exorcised the extremes of abundance and destitution by the quantity, the variety, and the security of its produce. Low farming is more dependant on the atmosphere than the earth, and, being unable to reserve its produce, must sell at any price, and this bears down the quotations of everything. Misery and freedom of action do not go together: to be compelled to sell, is to sell at disadvantage. Consequently what is to be most desired by the wealthy farmers is, not to have to compete with the petty farmers. This competition is fatal. It is the struggle between growers who have to reckon on the future with those who through misery are obliged to undersell. Shine out then, sun of civilization, and enlighten the world: let there be no more countries without roads and markets: let the growers supply the markets, and not consume all their produce on the spot. And, when all these shall labour under the same conditions, when they shall all be consumers, when they shall all feel the wants of an advanced civilization, we shall less often have those disturbances and crises in agriculture which we may rest assured greatly result from differences in production and in the way of living of the growers. It is fitting that when nations have a large extent of territory they shall be able to give up a certain part of this territory to a more or less desirable cultivation, which does not require capital to bring forth small crops, and through that become the resource of a rural population, leading, in some respects, a life apart from the rest. To say that this system prevails in France is to describe a state of things which explains the frequency of our rural crises and emigration.

Let us not then contend against our better aspirations: this would be to preach in a desert. Numbers of the population leave the villages because there is a feeling of desire in the fathers to set their children free from a burdensome condition. These are facts, and they contain a warning. All this signifies that civilization holds at bay the system of cultivation on large surfaces. In years of abundance this agriculture of the masses depreciates the value of produce with which the markets are swamped. In years of scarcity, it retires within itself, disappears from civilization, and consumes its produce. Can we, then, be surprised that the rising generation do not wish to accept a life of such vicissitude, of struggle, of self-denial, and misery?

The essential evil in our agriculture, as a whole, is a want of balance between capital, labour, and land. In the past the problem has been solved by practising an exhausting system of cultivation, which could not last. Now, this more and more fails us. Applied to poor and exhausted soil, rural labour is fettered. It can only free itself, it can only obtain its proper position, on fertile land. How and when will this second revolution take place? Evidently, when personal and real property shall have found their level—when matters have returned to their normal state—when we shall be delivered from large public loans—when wealth shall circulate freely in town and country—and when our system of taxes, not being antagonistic to agricultural progress, shall husband the raw material of agriculture, and especially all which tends to the production of manure. It is said that we are approaching that period. Agriculturists may look forward to the time when they are not limited to the home consumption, but have the prospect of widely-extended exportation. It may be, however, that the general position of France may not yet allow of the full satisfaction of the desires of agriculturists. This ought not to prevent them from striving after their object. The more the agricultural position is subordinate to the general position, the more necessary is it that the rural population should be fairly represented. Great interests which die out are such as yield to the fatality of circumstances, and suffer through the faults of others. Taught by experience, public opinion in France at the present time holds that the economic balance of the country requires that agriculture should have a large share in all the advantages of our powerful organization. Government has acknowledged that agriculture has, by its sacrifices acquired a right to economic equality. During the formation of our personal property agriculture has suffered from the desertion of capital, of labour, and intelligence. The day of reparation has arrived. The principal wealth of France is the agricultural wealth; not only that which is obtained from poor lands worked by petty farmers—eating rye bread, drinking water, wearing fustian and sabots—but the wealth derived from fertile land, worked by a population consuming and producing all that ought to be produced in our days. Village comfort! That phrase speaks volumes: it means equality between town and country, equality between trade and industry—in short, general prosperity.

E. Lecouteux.

ROAD REFORM IN SCOTLAND.

At the ordinary half-yearly meeting of the Chamber of the Highland and Agricultural Society in Edinburgh, held on the 13th instant, Provost **Pagan**, of Cupar-Fife, moved the adoption of the following resolution: "That the Chamber deeply regret the failures of the several attempts which have been made to pass a General Road Act for Scotland. But the Chamber have the satisfaction of knowing that so many as twelve Scottish counties have promoted and obtained Acts for the immediate or prospective abolition of all tolls and pontages within their own bounds." In supporting the resolution Provost Pagan began by saying that he felt honoured in being called upon to address the meeting upon a question in which he had long taken a deep interest, and which, he was glad to say, had taken a deep hold upon the feelings of the people of these kingdoms. He proceeded to give a detailed narrative of the movement for the abolition of tolls from the time that he published his work upon the subject in 1845, acknowledging the encouragement which he had received from the press, and directing particular attention to the report of the Royal Commission on the question, and to the Act which was brought in by the Lord Advocate, giving it as his opinion that perhaps one reason why that Act failed was that it did not adhere sufficiently close to the recommendations of the commissioners. He also referred to the abolition of tolls in Ireland, and to the various local road acts which had been passed of late years, pointing out the peculiar provisions of these local acts, and the defects of each. The Haddington Bill, he said, was successful, although it contained a damaging clause which permitted the keeping up of toll-bars in order to pay off the debt. The Elgin and Nairn Act was working most beneficially. It was more in terms with the Road Commission report. The proprietors in these counties were, in terms of the act, to pay off the debt, and the maintenance was to be paid half by landlords and half by tenants. Kirkcudbright and Peebles were also successful in procuring acts, the latter county after a hard struggle; and in both these counties tolls were abolished. He deprecated the practice of counties going into Parliament for local acts, on account of the expense and the trouble they gave rise to, and he was sanguine that country gentlemen might now be persuaded to go in for a general bill. He then referred to the public meeting held in Edinburgh in November, 1864, at which a committee was appointed to draw up a General Road Bill. The bill was prepared in the form of a Permissive Act, in the hope that although it might not be adopted all at once, it would gradually be brought into operation in the same way as Provost Lindsay's General Police Bill. Lord Elcho took charge of the bill, but after going through various stages in Parliament it was found impossible to proceed with it. The different modes which it proposed of abolishing or keeping on the tolls operated much against it. After referring to the Acts procured by Aberdeen, Wigtown, and Dumfries, the Provost described fully the provisions of the Banff Bill, which empowered the trustees to pay the debts of the roads in full or by dividend according to circumstances—a manner of dealing with these debts which he considered most equitable. When they were lamenting that they had not got as yet a general road bill, they had now all the elements before them on which they could go and ask a bill. They had the benefit of practice and experience, and they also knew better what the temper of Parliament was. Provost Pagan went on to show that England had not been behind on this question, after which he noticed the enormous cost of the toll-bar system, all of which would be saved under the system of maintaining roads proposed to be substituted for toll-bars. Then the toll-bars, he said, discouraged the use of roads; and on the whole he contended that there could be no doubt that under the new system there would be great economy, both in money and in time, as well as a great public benefit in giving facilities to intercourse, compared with the present system. The general result of the recent local Acts was that at present there were still seven counties which had tolls, and which would require still to be dealt with in a General Road Bill; and if these seven counties could be persuaded to take a General Road Bill, he could not doubt that very great benefit would arise, both to them and to the public. Provost Pagan then referred to the question of expense, stating that he had corresponded with the clerks of the roads in those counties which are working upon the Abolition Acts, and had got returns which showed the rate per pound for maintenance and repair. His information was to the effect that, in the seven counties referred to, the actual rate per pound for maintenance and repair gave an average of nearly 5¼d. Taking that as the probable rate, the burden upon the tenant paying £100 rent would be £1 2s. 11d., the same sum being payable by the landlord. Provost Pagan concluded by moving the adoption of his resolution.

Mr. **George Davidson**, Dean Park, seconded Provost Pagan's resolution, referring to his able exposure of the evils and errors of the present road system, which would be looked back upon as one of the strangest anomalies of the present age. He alluded to the enormous expense of keeping up the tolls, the inconvenience and often danger to which they subjected people at night, and the discreditable shifts that were often resorted to in order to avoid them. Perhaps the greatest of all their evils was the distrust attaching to them. They knew what was the amount of money cast into that public exchequer, but they did not know the amount which came from the public into the bag of the toll. Mr. Davidson went on to notice some of the objections which had been urged to the passing of the general Act, one of which was as to the proprietors being saddled with the debt. He concurred in the opinion that, as these roads were not for the benefit of the proprietors, but of the public generally, and were public as well as private property, the burden ought to be borne by both. He thought the debt should have been provided for by keeping up such a rate on land as to extinguish it in twenty-five years. Another objection which had been urged to the passing of the General Act had been in counties like Edinburgh, where there was a large mineral and manufacturing traffic, people being under the impression that the mineral and manufacturing interests would be much more largely served than the agricultural. But by introducing a larger rate on land this would be obviated.

Mr. **George Glendinning**, Hatton Mains, and Mr. **Harvey**, Whittinghame, briefly supported the resolution.

Mr. **P. M‘Lagan**, M.P., moved the adoption of the following resolution: "That the Chamber are of opinion that a General Road Act for Scotland should be forthwith prosecuted and passed by Government on the principles and recommendations contained in the report of the Royal Commissioners on Scottish roads, viz.: (1) The liquidation of road debt by owners of lands and heritages. (2) The consolidation of turnpike, statute labour, and bridge trusts. (3) The abolition of tolls and pontages, statute labour, assessments. (4) The maintaining and repairing of roads to be borne equally by owners and occupants of lands and heritages. (5) The expense of new roads and bridges to be borne by owners of lands and heritages." In supporting the resolution, Mr. M‘Lagan said he rejoiced that the Chamber were likely to recommend the introduction of a General Road Bill for the whole of Scotland. He thought there was a good reason why the Chamber should go forward at present with a memorial to the Government in favour of the introduction of a road bill, seeing that Lord Derby was in power when the Road Commission was appointed; and his Government would in all likelihood be inclined to do something in the way of carrying out the recommendations of the commissioners. The time had now passed for anyone to recommend the turnpike system. He did not think that any man need pretend to possess the spirit of prophecy who predicted that in a few years every toll-bar would be swept off the roads of Scotland. After insisting on the necessity for a General Road Act, and remarking on the mistake committed in East Lothian by keeping up tolls till the debts were paid, Mr. M'Lagan expressed it as his opinion that in any general Act it would be necessary for some central board to control the commissioners of the different counties, particularly where roads met, that all the roads might be kept in a like state of repair.

Mr. **JOHN DICKSON** (Saughton Mains), in seconding the motion, said that he seldom met with anyone who supported the present system, and who was against the abolition of the tolls, except upon the plea that it would affect their own pockets; and he trusted that, as the matter came to be better understood, parties who had only that plea to urge would be ashamed to urge it.

Mr. **DUNCAN M'LAREN**, M.P., said that Mr. M' Lagan had remarked that the fact that Lord Derby's Government was in power when the Royal Road Commission was appointed made the present time peculiarly favourable for pressing the Government to bring in a bill upon this subject. There was a still stronger reason in the same direction to be found in the fact that Mr. Walpole, the new Home Secretary, was the same Home Secretary that issued the Royal Commission. They could now go to Mr. Walpole, and tell him that he appointed the Commission, and that they had now a strong claim upon him to urge him to carry into effect the report of the Commission which he appointed. They had, in the report of the Royal Commission, a nucleus of legislation which had received great consideration from all the commissioners. The best policy was to stick entirely to the recommendations of the eport without amendments or qualifications. He thought hat they had a capital opportunity at present of pressing the question. That Association was a power in the State if it was discreetly worked. He wished them all success in the ause; and he should be very glad if he could lend a helping and, along with Mr. M'Lagan, to carry on the proposed measure.

Mr. **HARPER**, Snawdon, supported the resolution, and in oing so referred to the Haddington Road Bill, maintaining hat he did not know a more unjustifiable proceeding than hat which had been adopted in that bill as to the debt, beause the tolls were mainly supported by the tenant-farmers nd traders, and it was not fair that they should be called pon to pay the large proportion of the debts on the roads.

Mr. **SCOT SKIRVING** proposed the adoption of the last resolution, which was as follows: "That a memorial to the bove effect be submitted by the Chamber to the Right Hon. e Home Secretary, the Lord Advocate, and other members Her Majesty's Government; and petitions presented to oth Houses of Parliament, praying them to take up and ttle the question on the principles and recommendations resaid." Mr. Skirving referred to the unanimity which preiled at the meeting as a proof of the growing strength of e feeling against tolls, as he was perfectly certain that ten ars ago many of those present would have supported tolls. ailways would knock the tolls down in the end, because they t away the argument that he who used the road should pay r it. The present system, by placing bars close to the railly gates, was to force the people who used the railways to y for the roads. Although Elgin and Banff might be comended for what they had done in their local bills, yet he ought that a general road bill was much to be preferred to e scarecrow of a thing which they had got in East Lothian. at was a bungling one-sided measure, which made the farers pay almost the whole of the debt. They paid two-thirds the direct taxes, and nineteen-twentieths of the tolls; and these reasons he would strongly recommend a general bill.

Mr. **GEDDES**, Orbliston, Fochabers, in seconding the mon, gave an account of the operation of the local Act abolish tolls in the county of Elgin, remarking that it had been great success. He concluded by stating that as the counties Aberdeen, Banff, and Ross had all obtained similar powers those contained in the Elgin Bill, by next Whitsunday re would scarcely be a toll-bar between Aberdeen and John-Groat's.

Mr. **M'COMBIE**, before putting the resolutions, said: After the report of the Royal Commissioners in 1859, and the evidence then laid, I do not suppose that anyone, unless it may be a salaried official, can be found to support the present system of making and maintaining public roads. The system is ruinous to every interest involved, is inconsistent with all modern ideas of economic management of large moneyed concerns, and has already resulted in the loss of a million of money to the unfortunate traffickers in it. I see the gross debt of the turnpike roads in 1859 amounted to £2,322,006, while the trusts were only able to pay £45,000 of interest, which represents a capital of not more than 10s. per pound of the real debt. Hence a dead loss of upwards of a million of money; and hence, I say, it may be assumed that the present system is doomed. It must end. Either the Legislature must end it, or it will end itself, and, with it, many of the trustees now liable for this million of bad and rapidly-increasing debt. I concur heartily in the recommendation of the Royal Commissioners, that all roads, bridges, and ferries trusts in every county should be consolidated into one trust—that the toll system should be abolished, as a system of collecting money at an absurdly extravagant rate—as a system, besides, not consistent with the age we live in—inconsistent with the necessities of the system it grew out of—a system terminated when the turnpike roads ceased to be through routes by the opening of the railways—and altogether a thing of the past, which the present and future have no need of, and which they ought not to be called upon to pay for. But how is this to be done—how, regard being had to all the interests involved, is this great and necessary reform to be brought about? The difficulty does not appear to be so much *how* it is to be done, as *who* is to do it. The late Lord Advocate brought in an excellent bill in 1861, showing how it could be done; and for myself, I have no difficulty as to the *how* or the *who* either. The various county-trusts being consolidated into one, and tolls abolished, the making of new roads, and the maintaining of old and new, should be borne by the parties whose they are, and for whose benefit the roads are made and maintained. Now, who are they? I unhesitatingly assert they are the owners of heritages of all kinds, whether landed proprietors, house proprietors, mine proprietors, or others. What is the value of land in any part of this country without roads to it? The better the accesses for stock and folk and for the commodities both require—and for the transmission of which mainly roads were and are made and maintained—the higher the rent the land produces to the landlord. Had the landowner not invested in the making and maintaining of roads to his property, his rent-roll must have been greatly less than it is. His tenants just pay annually the sum his investment in roads is worth in addition to what his land would have been worth without it. The roads are of such vital and primary interest to the landlord, that I look on them as additions—as parts and pertinent—and most valuable parts and pertinents of his landed property. House proprietors stand much in the same position as lands—the roads probably led to the building of the houses—but for the roads no villages would have been built, no traffic would have been needed; the roads have done it all, and opened up mineral fields, and improved properties in every direction, converting what was formerly a wilderness into productive agricultural land. Now, the owners have got all these benefits and blessings—their farms have let, their villages have been feued, an outlet for their mineral wealth has been found—elegant society has surrounded them, and all because of what?—because they wisely invested in road-making. Nor is it different in the case of railways or canals. Without local roads, and good roads too, where is their local traffic to come from, or be discharged? My view of the matter is, that the blessings, the benefits, or the loss of making and maintaining or not making and maintaining our public roads is primarily an owners' question, and that the burden of making the roads falls naturally on owners. I know it has been said that the £2,000,000 of road debt should not be laid upon the proprietors, and it has been instanced that proprietors have paid in an increased purchase price for the roads formed to their respective purchases at the time of their purchase. But first, if the proprietors are not liable, no one else can justly be charged; second, proprietors at the time of contracting the debt have no excuse for not paying it; but third, the proprietors of recently-acquired estates may possibly have some excuse, so far as past road debt is concerned, but none so far as present and future mainteinance goes. The debt is not the debt of the property, but of the old proprietor who granted bond for it. If a purchaser pays his predecessor's road debt, he has his relief against his predecessor. If purchasers paid their predecessors for roads they have to pay for again, they should get back their money—clearly and honestly their relief for their share of the old road debt unpaid by their predecessors (the proper debtor) lies against their predecessor. But their predecessors may not be able to give the relief they are honestly bound to give; and to meet such a case the Royal Commissioners recommend a valuation at the sight of the Sheriff of these road debts, and that would operate as a perfect relief to them: they would then only be burdened for value received, and would have no right to complain. I know it has also been said that railway companies should not be made liable for road debt or even for maintenance of the roads made—but I have already sufficiently met that objection. Their existence depends on accesses to their stations for the receipt and discharge of their traffic, and in my opinion their interest lies as much in having good roads as any other party concerned. They have carried away the through turnpike traffic, to meet which through turnpike roads were formed and debt contracted, and the obligation on them to meet a fair share of that debt is in consequence all the stronger, as in a question with other owners of heritages, and in my opinion they ought not to refuse their fair share with others of the debt contracted, and which would have been paid from ordinary traffic on the road but for their taking it by rail. It has also been argued that occupants should pay both debt and maintenance to the extent of one-half, and that they should be assessed accordingly. But it occurs to me that this objection has been made without thought; for (1) so far as current leases are concerned, these must regulate the liability of parties; and (2) so far as future leases are concerned, if an occupant is to be assessed £20 per annum for a road debt, he will just offer £20 per annum of less rent. If I am taking a farm which I know will raise as many animals one year with another as will enable me in an average of years to pay £500 of rent on the gross, and if I find that I have a shilling a pound of road debt to pay in addition, and sixpence per pound of assessment to maintain roads of access to the farm—in place of offering £500 of rent I will only offer £462 10s.; and every sensible offerer will do the same. The matter just comes back on the landlord again, and I apprehend it would be best to lay it direct on him at first. Roads being part of the landlord's property, the property and the roads to it go and are let together, and the rent given is the rent the two combined are worth to the tenant, and no sensible man will offer more: and I take it that if a landlord prefers dealing with a man who is not sensible, the rent he will draw in the end will be less, whatever more it may appear on paper. The bill of the late Lord Advocate, to which I have already adverted, gave substantial effect to most of these views. It (1) abolished the tolls, statute service, and bridge money; (2) consolidated the statute labour, turnpike, and bridges trusts of each county into one trust, and provided one management; (3) it gave a certain voice to the tenants in the management of the roads; (4) road debts were to be valued by Sheriff, and made a charge on the owners of lands and heritages; (5) the roads were to be maintained by an assessment, half payable by owners and half by occupants, and any new roads were to be made at the cost of owners. That was, on the whole, a well conceived attempt at a general settlement of the question, and I hope, with modifications, it will be revived by his successor, if not yet promoted by Mr. Moncrieff himself; but it ought to be a compulsory, and not a permissive measure. Such a measure deserves, in my humble apprehension, the support of this chamber of practical men. With these remarks, I put the resolutions to the meeting.

The resolutions were all unanimously adopted.

NOTES ON HEDGING.

Much has been said of late in agricultural papers on hedging, and its importance justifies all that has been or can be said in its favour, as it is the method by which much of the enclosure of the farming lands of the prairie must of necessity in time at last be effected. Having during the past season travelled through a good many counties of Illinois and Iowa in about the latitude of Chicago, and noting some of the defects in their system of management, I propose to point out what I conceive to be a radical error in the general management of hedging. I do this with the more assurance, having been practically concerned with hedging for more than thirty years. I first began with the Virginia thorn, sometimes called the Washington thorn, and though tolerably successful, it has not been quite satisfactory; but for the last ten years I have tried the osage orange, and with proper treatment I think it the far preferable material.

The hedges so prevalent in the West are of this material, but after being planted and got to growing, there the attention has generally ceased, when it should have but just begun. Soon after I begun with the osage orange I got Dr. Warder's book on hedging, as soon as published, and have followed its directions and considered it a success. We now have a hedge that is proof against any stock and would almost turn a rabbit. The great secret of management is early and regular cutting back the upright shoots, leaving the side-branches, thus dividing the growth and causing it to spread, and not allow the upper shoots to develope and smother the lower ones, as they assuredly will do if allowed to grow unpruned. I would earnestly advise all who have hedges to get Dr. Warder's book and follow its teachings, and I am satisfied they will be amply rewarded. Those who have hedges, if not too large, had better cut them down at once and begin anew by trimming as directed. The great object is to get a thick bottom, and this can only be done by close cutting down while young: this will take some labour it is true, then what good ever was accomplished without labour? and remember that it is working for future time. In first trimming we used a pair of large garden shears, but lately my son got an old sword blade and ground it up, and used that; and this, if not literally turning a sword into a ploughshare, is at least turning it into a pruning implement. And by giving this a backhanded upward stroke, an active hand can trim many rods in a day, from a quarter to half a mile. It should be done when the shoots are tender, say a little after midsummer.

Dr. Warder gives particular directions, from the sowing of the seed to the finishing of the hedge, with plates shewing the different implements used. I see some have planted the seed where the hedge is to grow. This I think is not a good plan; first, it requires more work to keep the young plants clean than if in a bed, and then there must be more seed used than necessary, and some will have to be taken out, or we shall not be sure of enough to have the plants at regular distances that are left to grow. Our plan has been to plant in beds four feet wide with alleys between, and the seed dibbled in rows across the bed wide enough apart to use a hoe between the rows. For planting the hedge have the ground prepared beforehand, then stretch a line with marks on it the distance apart for the plants, and then make a hole with a dibble at each mark, or insert the spade a little slanting, and raising the earth up by raising the spade then insert the plant under it, then withdraw the spade and press the earth on to the plant; either method is soon done.

I see by an advertisement that a machine has been patented for a hedge trimmer by horse power; this is what I have been looking for, thinking that our machinists would bring out one ere long, and if a good one it will be a great desideratum, and make the labour of trimming much easier and more expeditious.

Again, let me urge those who contemplate planting hedges to follow Dr. Warder's recommendations, and I am sure they will be successful, and one need to travel but a little on the prairie country to see the want of success with the present management. There is one well-managed hedge near Richmond, Indiana, and it seems a perfect success, worthy to be followed.

YARDLEY TAYLOR

Loudon County, Virginia. (in *Prairie Farmer.*)

THE SEWAGE OF TOWNS.

On Thursday, October 25, a congress of agriculturists, landowners, engineers, and others interested in this question, assembled at the Royal Pump Rooms, Leamington, for the purpose of considering in what mode the sewage of towns could best be disposed of. The subject is one which at present is exciting great attention, in consequence of the difficulties in which the governing bodies of towns are becoming involved by the pollution of rivers with sewage matter. Even Leamington, the royal spa, is at present under an injunction from the Court of Chancery, with a penalty of £5,000 for its infringement, granted at the suit of Messrs. Thomas Heath and Alfred Field, two extensive landowners on the banks of the Leam, into which the sewage of Leamington is discharged, a short distance above its confluence with the Avon, after having been deodorized by what is technically termed the lime process. It is in a great measure owing to the difficulties in which the Local Board of Leamington are involved that the conference has taken place, as the board are prohibited by injunction from discharging the effluent water from the sewage works into the river, and their efforts to obtain land for irrigation have proved unsuccessful. The idea of the conference originated with Mr. Hitchman, of the Arboretum, who was recently a member of the Leamington Local Board of Health, and who for several years past has strenuously advocated the application of sewage to the land.

The congress was presided over by Lord Leigh, the Lord-Lieutenant of Warwickshire, who convened the meeting in compliance with a numerously signed requisition. Amongst those present were Mr. A. W. Peel, M.P. for Warwick; Mr. Davenport Bromley, M.P. for North Warwickshire; Dr. Hawkesley and Dr. B. W. Richardson, of London; Drs. Jephson, Jeaffreson, Hornibland, and O'Callaghan, of Leamington; the Hon. and Rev. J. W. Leigh, and a number of eminent engineers and agriculturists, as well as representatives from the corporations of Manchester, Glasgow, and other towns.

Lord **Leigh**, in opening the proceedings, said he should be happy to do anythingin his power to assist in solving one of the greatest social difficulties of the day, in which not only those present, but the entire population of the country were deeply interested. When first asked by Mr. Hitchman to preside over the conference, he thought the present time inopportune, and that it would be better to wait until the Royal Commission had made its report upon the pollution of rivers. When, however, he received a requisition, signed by all the large landholders of the neighbourhood and by the principal inhabitants of Leamington, he felt it to be his duty to consent to preside over the congress, especially as he had been assured by gentlemen whose opinion he valued, that the proceedings of that meeting would be likely to elicit facts and information calculated to be of assistance to the Royal Commission.

Dr. **Hawkesley** read a paper on "The power for good or evil of refuse organic matter, with an exposition of the failure of the existing plans for turning it to good account, together with a description of a successful method." He set out by referring to the importance of effecting two things—Restore to the land the ingredients necessary to continued productiveness; and prevent the contamination of wells and rivers, from which the supplies of water were obtained for towns, by sewage and organic matter. In support of the fertilizing properties of town sewage he quoted Liebig and other eminent authorities; and in illustration of the evils resulting from water being rendered impure by sewage ingredients, he cited the cholera cases traced to the Broad-street pump, the outbreak of the epidemic at Epping, and the increase of choleraic seizures, in districts, supplied with water from the River Lea, from 13 per cent. in 1849 to 21 per cent. in 1854, and 78 per cent. in 1866. He also mentioned, as a remarkable fact, that the type of disease had changed from pthenic to æsthenic, *pari passu* as water closets had been substituted for privies. It was not difficult now to see that the change from cesspools to water closets had been made without due reflection, but that the ingredients, which would have been productive of much wealth, had been converted into the fruitful sources of disease and death. The high, middle, and low level drainage of London would not rectify the evils resulting from the present system of sewerage, for science and experience were dead against it. The more extensive the drainage system, the greater would be the generation of pestiferous gases, which would eventually escape through the imperfectly-trapped drains of the poor, the street gullies, and every time a water closet was made use of. Irrigation was a less evil than the pollution of rivers, but irrigation still left unremedied the pollution of the sources of our water supplies. Any attempt to back the present system would only result in loss of time, money, and many valuable lives. How, then, was every requirement to be met and every difficulty removed? He believed this was only to be accomplished by the employment of dry-earth closets. Earth was Nature's own deodorizer, intended by God for the purpose, and the clod men trod under their feet bore as distinctive evidences of design as any other portion of the creation. If Moule's earth-closet was used, he calculated that the cost of removing the whole of the excreta of the three millions of population in London would cost £623,250 per annum. He proposed that the City should be divided into 500 sections, and, estimating the total separate habitations at 500,000, and allowing two closets as an average for each, he made the round number 1,000,000. Each of the 500 sections would have charge of 2,000 closets, to empty which three times a week, between six and seven o'clock in the morning, would require ten carts, twenty horses, and twenty men; the cost of which he estimated at 8s. per day. The annual cost, therefore, of the whole of the 500 sections would be £623,250. On the other hand, taking the lowest estimate of the value of the fluid and solid excreta of every person at 14s. per annum, the value of the sewage of London would be £2,100,000 a-year. If from this sum were deducted the expenses of removal, there would still remain a profit of £1,476,750; or, if 7s. per head was given to each person annually for these refuse materials, which would amount to £1,050,000, there would remain a net balance to the credit of £426,750. The deductions he drew, at the conclusion of his paper, were That the refuse organic matter from any human community is of immense amount, and of great value if well applied; but the source of great, varied, and increasing evils to the public health if ill applied, as well as a great drain on the resources of the wealth and the food of the people. That the present mode of dealing with the sewage of towns fails to utilize it, but, on the other hand, so mixes it up with the great essentials of life—the air we breathe and the water we drink—as to lower the standard of vitality, produce much disease, and convey epidemic poisons in the most fatal and wide-spread manner. That the present system is an error from the beginning to the end, and incapable of any satisfactory improvement, And that the method of employing agents for absorbing, deodorizing, and utilizing the matter, according as he had described and detailed it, affords a complete, practicable, and highly practical mode of accomplishing all the objects of the sewage system.

Mr. **Helon**, of Manchester, approved of the principle Mr. Hawkesley had propounded, but could not pledge himself to all the details. He read a letter setting forth the views of the Manchester Corporation, from which it appeared they were favourable to the substitution of dry closets for the existing water-closets. He complained that the Royal Commissioners did not appear to be fully considering the whole question, but seemed to have set out with the conclusion that the application of sewage to land by irrigation was the proper mode, and that their investigation was to be restricted to the pollution of rivers.

Mr. **Stephen Ford** held that sewage was valueless as a manure unless it could be applied to land by irrigation.

Mr. **Menzies**, who is attached to the Engineers at Aldershot, mentioned that the sewage of the camp was collected in tanks; and, instead of receiving anything for it, it actually cost between £500 and £600 a-year to get it removed.

Mr. **Walter McFarren** (of Glasgow) stated that in that town they had applied dry-earth closets to about 80,000 of the population, chiefly of the lower classes, and, by removing the excreta within the twenty-four hours, no nuisance whatever was experienced; and though the receptacles were fixtures, no inconvenience or difficulty was experienced in emptying them.

Mr. **James** briefly spoke of the success which had attended the employment of Moule's dry-earth closets at Halton, on Baron Rothschild's estate. They had been in use six months, and closets with self-acting lids being used, the requisite quantity of soil was deposited every time they were used, and although fixed inside the houses, not the least nuisance was occasioned by them. A man was employed to see that a due supply of earth was provided; but the value of the sewage paid his wages, and left a surplus.

Mr. **Hitchman** spoke in favour of the adoption of dry closets, and the appointment of officers of health throughout the country to see that they were properly supplied with earth and regularly emptied.

Mr. **Taylor** (of Royston, Herts) then read a description of a plan for the manufacture of British excreta; and Mr. J. **Rose** having described a patent for accomplishing the same object, the Conference adjourned.

The Conference re-assembled at the Royal Pump Rooms, on Friday morning, Lord Leigh again presiding. The proceedings were commenced by—

Mr. **Menzies** (of Windsor) reading a Paper on the separation system. He holds that by the separation of the rainfall from the sewage proper, the solution of the greater part of the difficulties connected with the disposal of the sewage of towns would be accomplished. By means of a filter he would intercept solid particles, and mix them with ashes; and the fluid portions he would dispose of by irrigation. Having separated the rainfall from the sewage, the latter would always be the same in quantity and quality, and would not be in the greatest value at that season of the year when least required, whilst the rainfall would be returned to the rivers, where it was much needed.

Mr. **Rose**, of Birkenhead, then gave a description of his patent for the manufacture of British guano from town excreta. He held that earth was not an efficient deodorizer, and that the effluent water passing from land irrigated with sewage water contained a large quantity of the ingredients of sewage.

Mr. **Bell Galloway**, of London, read a paper entitled, "Suggested Plans to Utilize Sewage and Prevent the Contamination of Wells, Streams, and Rivers." He advocated the adoption of dry closets, and that ashes and house-sweepings should be used with the excreta, and, if necessary, peat-ashes. He affirmed that the present system of disposing of sewage, in the waste of fertilizing matter and injury to public health, represented a loss that could not be set down at less than £20,000,000 or £30,000,000 (a laugh).

The **Secretary** then read a letter from Mr. Brown, J.P., of Antigua, in which he described the success that had there attended the use of closets, by which the urine was separated from the fæces.

Dr. **Carpenter** read a paper "On Croydon; the Past and Present Successes and Failures of the Local Board." He set out by showing that, according to Mr. Grainger's evidence before a committee of the House of Commons, in 1849, Croydon was then one of the most unhealthy places in the kingdom, the death rate being 1 in 36, whilst the county generally showed an average death rate of 1 in 58. He also stated that a large amount of premature mortality resulted from the entire absence of general drainage, defective water supply, and the presence of various local causes of disease of a concentrated character. Mr. Grainger also reported the fever rate to be rising, being, between 1845 and 1850, no less than 7.6 per cent., the general death rate being 26.1; and lastly, Dr. Westall showed that the deaths from zymotic diseases were very numerous. The population was then 19,000, but it had now increased to 42,000. Since 1848 the town had been thoroughly drained, a good and abundant supply of water had been provided, and local nuisances had been removed. The result had been a very large decrease in the rate of mortality, whilst zymotic diseases had fallen from 31 to 18 per cent. After describing the manner in which sewage is conveyed to the land used for irrigation, he proceeded to speak of the expense which the works had entailed. The total amount expended upon Government works had been £120,000, of which £1,536 had been repaid, leaving a balance of £104,841 to be discharged within thirty years. But in addition to the sewage irrigation, the board had provided an adequate supply of water, purchased 36 acres of land as a recreation ground, provided public slaughter-houses, erected extensive baths, and purchased various freehold properties for the purposes of the board. If they could charge the same price for water as many companies did, the revenue from that source alone would pay the interest on all the capital expended. But, if they took into consideration the various improvements he had enumerated, it would be seen that the cost of the sewage works themselves had not been very great. The expenses, however, had been greatly increased by mistakes into which the Croydon board fell, but which other towns, benefiting by their experience, could avoid. These mistakes were—laying down too small sewage-pipes, laying them in wrong situations, the use of too cheap materials, and the omission of every efficient provision for flushing the sewers; but the greatest mistake of all was the attempting to deodorize the sewage. Every improved plan was tried in succession, but when thought to be most successful it was found wanting. It was not until they adopted the system of irrigation that they got rid of their legal difficulties and expenses. Then their sewage outfall, formerly one of the most troublesome, became one of the simplest of their works, and those who were their most inveterate enemies became their staunchest friends. He affirmed that the result was, they had increased the healthiness of the locality, the death rate having decreased from 28 to 19; whilst, with respect to the debt incurred in carrying out the improvements, there was only an increase of 9d. per pound in the rates, and the local board had more than sufficient stock-in-trade to pay off the whole of the debt, if it were necessary to do so.

In answer to questions, Dr. **Carpenter** said that an outbreak of typhoid fever at Croydon was in every instance attributable to a want of ventilation in the sewers connected with the houses in which the cases occurred. The local board had taken steps to remedy this, and to prevent the evil being perpetuated in new houses. He had no hesitation in saying that the Croydon system was the only one which he found to answer for large towns like Manchester, but it was not adapted for small country places.

Mr. **Baldwin Latham**, Surveyor of the Croydon Local Board, read a paper on the "Croydon Sewage." He said that, at Croydon, the sewers were well constructed, had a good fall, and deposited the sewage at four outfalls, the principal two being at Beddington and South Norwood, and a third discharges into the metropolitan sewers. At Beddington and South Norwood the sewage was strained, to keep back the more crude portions, which experience showed was injurious when passed on to the land with the fluid. The solid matter thus intercepted, when mixed with ashes, was applied to the land, in connexion with irrigation, with great advantage. The Croydon principle was most effectual, and might be carried out upon any land. The sewage flowed in a thin film over the roots of the plants, and could be applied during all the stages of their growth, and up to within a short time of cutting a crop. It was applied at all seasons of the year, and in winter the land retained the fertilizing properties until required for the growth of plants; but the crops at Croydon were always growing, although of course not so rapidly in winter as in summer. He attributed this continued growth of crops in winter to the temperature of the sewage, which he had found increased during a period of frost. The produce from the land was equal to 5s. per head of the population. The purification of the sewage, after it had flowed over the land, was most complete, and actually contained less organic matter than the water supplied by several of the London water companies. It must be remembered that water which had been in contact with the earth took up some of its constituents, and that about twenty per cent. of the fluid was evaporated whilst it flowed over the land, and therefore allowance must be made for both in estimating the organic matter found in the sewage. Without allowing for either cause, however, there were only 2 grains more inorganic, and not quite 1½ grains more organic matter in the purified sewage water than in the water supplied to Croydon.

In answer to questions, Mr. **Latham** stated that they had 330 acres under irrigation, and he advised that land should be purchased by local boards. The complaint at one time was that sewage would render land barren, but now the objection was that it produced such immense crops that there was a difficulty in disposing of them. They had found by experience that a ton of grass could be converted into hay in from an hour and a-half to two hours, by passing heated air through it, at a cost of about 12s. per ton. It would pay either to pump sewage or to apply it by gravitation. Their experience had shown that Italian ryegrass was the best thing to cultivate, as the fact of its requiring to be renewed every three years was an advantage, as they then cropped the land with mangolds. This was done to exhaust the land; and the great principle in applying sewage was to keep the soil as poor as possible, so that it might the more freely absorb the fertilizing properties of the sewage. The sewage at Croydon flowed on to the land continually, day and night, summer and winter, and every particle was utilised. It was not true that the sewage at South Norwood was insufficient to benefit the land, and that nothing had grown there for some time past. There was now a crop of rye-grass three feet long, and that was the fifth crop this year. The Italian rye-grass sold for about £12 per ton, and the average produce was about eight tons per acre. Their chief opponents had been the owners of the fisheries in the Wandle, and the millowners. But the former had to put down a grating before the outfall-sewer, to prevent the fish ascending it; and a millowner, who required them to construct a drain to discharge the overflow-water below his mill-head, had himself constructed a drain to convey it above his mill, so that he might have the benefit of it. He did think a time might come when the soil having become saturated with sewage would not yield the crops they obtained at Croydon; but the way to obviate that was to exhaust the land as much as possible, by carrying off every crop, and returning nothing to the land but sewage. If they did not break up the land every third year and alternate the crop, the yield of rye-grass would neither be so large nor so valuable. After mowing a crop of rye-grass in May, they broke up the land and sowed it with mangolds, which were off in sufficient time to allow the land to be again sown with rye-grass at the close of the year.

The Secretary read a letter from Mr. S. W. Congreve, of Harborough Magna, who formerly applied the sewage of Rugby to land. He said his experience was that sewage could only be profitably applied to land in some few cases. When applied to good land, it produced a large quantity of coarse inferior herbage, only fit for store cattle. That was his experience, and he had suffered great losses by the application of sewage.

Mr. C. H. Bracebridge, of Atherstone Hall, said Mr. Congreve paid £50 a year for the sewage and £50 for pumping, and some years the experiment was successful and others it was not. The land, however, was not properly prepared for its reception, and it was only tried upon ordinary grass land. Besides, as Rugby was then inadequately supplied with water, the sewage was not sufficiently diluted.

Mr. Maud, of Rugby, said that now an abundant supply of water had been obtained; and that the Local Board of Health were negotiating for land on which to apply the sewage, under the direction of Mr. Baldwin Latham.

The Conference then adjourned for refreshment, and on reassembling,

Mr. Moore, of Pump Court, London, read a paper in favour of irrigation, based on his own observations of practical experience, extending over a period of forty years. Experience had shown deodorization was both expensive and ineffectual; and the dry-earth closet system was not much superior to that which water-closets superseded.

Mr. Bardwell read a Paper on the "alternating system." He would precipitate the solids of the sewage with French sulphate of lime, and convert it into a dry manure; and then send purified liquor only, alternately with sewage from the outfall, to the land. His objections to irrigation were—that constant irrigation would injure rather than benefit the growing crops, and that sewage cannot be sent through pipes without their gradually becoming clogged up. The sewage, too, deposited a crust on the surface of the land, and the liquid carried off the urea of phosphates, which were the most valuable fertilizing ingredients of sewage.

The Rev. Mr. Groome then gave a brief review of the Stroud deodorizing works, which he spoke of simply as an experiment. He stated they had rendered the water approximately pure—so pure in fact that fish existed in it without injury, and that he thought was as much as would be insisted upon. He expressed an opinion that irrigation would eventually injure the land, and that the objection to the dry closets was the quantity of earth that would be required.

Mr. C. E. Austin read a paper on what he termed the "Prompt Filtration System of Drainage." His proposition was to separate the fluid from solid portions of sewage by filtration, at the earliest possible moment.

Mr. Garnett (of Quernmore Park, Lancashire) described a method he had adopted, at Lancaster, of dealing with sewage on the dry-closet principle. The closets had been introduced into the grammar school, the county gaol, a large manufactory, and other places; and the excreta, after being mixed with ashes, cotton waste, or other dry substances, were dried in a shed. The outlay had been £236 14s. 3d., and the proceeds, 400 tons of solidified manure, were valued at £200. The manure thus manufactured had been applied to grass and turnips, and found to be better than ordinary farm-yard manure.

Mr. Chessire (of Bleam) showed one of his patent interceptors, and explained its operation; Mr. Hitchman read a paper on "The Removal of Refuse from Towns;" and W. Baumber (of Exeter) exhibited a patent self-acting closet, and an intercepting urinal. Several other papers still remained to be read, at 4 o'clock, when—

Mr. Heron (of Manchester) urged the importance of the Conference expressing some definite opinion on the question. It was essential they should do so, if the Conference were to have any practical effect.

The President put it to the meeting whether the remaining papers should be read, and on the Conference deciding they should not—

Mr. Garnett, of Quernmore Park, rose and moved the following resolution for adoption by the meeting:—"That after careful consideration of the valuable information submitted, this Congress is of opinion that the system of allowing excrementitious matter from houses to pass into drains and sewers, and to pollute the rivers, is in all cases highly objectionable, and ought, so far as may be practicable, to be prevented." He thought it most desirable the Congress should express itself as opposed to the generally-received opinion that the rivers are the natural outfalls for sewage. He complained that Mr. Rawlingson, one of the Royal Commissioners, had an inclination in favour of irrigation; whereas the duty of the Commissioners was to consider the whole question fairly, dispassionately, and judicially.

Mr. Alderman Romney, of Manchester, seconded the resolution. He held that there had been satisfactory evidence adduced that the dry-closet system would be superior to water-closets, and that the wet system of removing sewage was both philosophically and scientifically unsound, and had only been adopted for want of a better.

Mr. Baldwin Latham, of Croydon, moved an amendment, for the omission of the words "drains and sewers," on the ground that it aimed a blow at the general drainage of all towns.

Mr. Spencer, of Manchester, seconded the amendment; and Mr. Heron, of Manchester, opposed it; but, on being put from the chair, it was carried by a large majority.

Dr. Carpenter urged that the dry-closet and water-systems ought not to be pitted against each other, and moved the following resolution as expressing the opinion of the Congress:—"That the system of irrigation, when carried out in a scientific manner, removes the difficulty which arises from the present noxious plan of polluting the rivers of England, but that there are circumstances in which other systems may be applicable."

Mr. Stephen Ford seconded Dr. Carpenter's proposition.

Several amendments were proposed and withdrawn, and Dr. Carpenter's proposition was eventually unanimously adopted, with the following addition, to which Dr. Carpenter consented —"That this Congress considers that no one system can be laid down which will be suited to all towns"—on the motion of Mr. Draper, of Banbury, seconded by Mr. Bell Galloway, of London.

The Congress terminated with a vote of thanks to Mr. Hitchman for the trouble he had taken in connection with the meeting, and to Lord Leigh for presiding over it.

THE REFORM MOVEMENT AND THE COUNTIES' REPRESENTATION.

The subjoined is a full report of Mr. Newdegate's speech:

Mr. **Newdegate** said: I am perfectly aware that we are drawing near to the close of this protracted and important debate. I will therefore state what I have to say upon the question before the House in the fewest possible words. I join most heartily in the tribute which has been paid by the hon. member for Leeds to the merits, the virtues, and the progress of the working classes. It would, sir, indeed be most singular if, as a county member, one of the 160 members of this House who endeavour to represent the majority of the working classes in this country, I should fail in appreciating those high qualities which I have seen tried and tested in periods not only of prosperity but of adversity. Sir, I have seen the working classes under the temptation of violence; I have seen them tried when they might have been misled by the arguments and incitements, not only of what may be called Radical, but Chartist orators; and, in my humble capacity, I do most heartily bear my unfeigned testimony to the merits, to the virtues, to the common-sense, and, in many cases, to the acquirements of the working classes. But I should be doing an injustice to the hon. member for Leeds, and I should be doing an injustice to the hon. member for East Surrey, who sits behind him, if I failed to object to the bill now before the House, in the form in which it has been presented to the House, because I have voted against the mere reduction of the county franchise when it has been proposed by the hon. member for East Surrey, and I have voted against the mere reduction of the borough franchise when it has been proposed by the hon. member for Leeds. And, as I am one of those who are not ashamed of being consistent, I feel it my duty, as a matter of consistency, to give my vote for the amendment of the noble lord the member for Chester. There are other grounds for my taking this course, which, with the permission of the House, I will shortly state. Before I do so, however, I wish to take this opportunity of expressing my sense of the conduct of the noble lord the member for Chester. Sir, the noble lord's conduct on this occasion is well worthy of his high position, and will be remembered for many years to come. If this debate has been unusually protracted, why has it been so? Because we are debating a portion of a measure of Reform, the whole of which is not before the House. And I say, sir, in the words of Mr. Fox, that "the duty of this House is vigilance in preference to secrecy, and deliberation in preference to despatch." When a Government comes to this House, and produces a measure which it calls a Bill for the Improvement of the Representation of the People, but which is, in fact, only a measure for the reduction of the franchise, justifiable, perhaps, in that respect, but imperfect nevertheless, inasmuch as it does nothing to adapt the representation to the extension of the franchise they propose—when such a measure as this is submitted to the House, without any explanation in the first instance, but merely thrust upon our attention, I take it that the noble lord the member for Chester is performing a duty which Mr. Burke described as "not yielding to the fear of differing with the authority of leaders on the one hand, and of contradicting the desires of the multitude on the other, which induces them (members of Parliament) to give a careless and facile assent to measures as to which they have never been consulted; and thus things proceed by a sort of activity of inertness until whole bodies, leaders, middlemen, and followers, are all hurried, with every appearance and with many of the effects of unanimity, into schemes of politics in the substance of which no two of them are fully agreed, and the origin and authors of which, in this circular mode of communication, none of them find it possible to trace." Now, sir, I believe that the noble lord has performed a great duty; and I have quoted the language of Mr. Burke in order that my tribute to him may not rest upon my humble authority alone, but on the authority of one of the greatest political thinkers that ever left the legacy of his inquiries to the people of England. In paying this tribute to the noble lord, I may be permitted to add that the circumstances of to-night, when a relative of his has opposed the course which he has taken, must convince the House that he has not yielded to any feelings but those which have respect to the public good; and that he has discarded every feeling of family connection as well as party ties in order to perform a duty which, I say, this House will hereafter appreciate more fully, than perhaps it does at present. Sir, we have been relieved from all doubt as to the origin of the conduct of Her Majesty's Government. The hon. member for Birmingham has informed us that six years ago he recommended the noble lord at the head of the Government to adopt the course of proposing merely a reduction of the franchise, without any redistribution of seats; that is, without providing for the adaptation of the representation to the increased constituencies, trusting that he would thereby obtain a lever by which the representation might subsequently be adapted to his views. Sir, I have a distinct objection to this course. Much has been said in the course of this debate of the vices and the dangers of Democracy, in all of which I concur; but you may have all the vices and the dangers of Democracy, by the undue aggregation of those who form a minority of the electors; and that is precisely what will ensue if this measure passes, and a dissolution of Parliament takes place. This House will be elected with exaggerated constituencies, and without a representation adapted to the aggregation of the voters which you are now asked to create. The distribution of seats would, in that case, be left to the discretion of a Parliament elected by a body confessedly not accommodated with a representation that would secure the due and proper expression of public opinion. I object to this measure, then, upon the same grounds that I objected to the bills of the hon. member for East Surrey, and to the bills of the hon. member for Leeds. I hold that, if the Reform Bill of 1832 deserved its name, the present bill is not a Reform Bill at all. The effect and intention of the measure of 1832 was actually to raise the qualification for the franchise, by providing for the gradual extinction of the Scot and Lot voters, and providing also for the gradual extinction of the freemen. It absolutely raised the qualification; nevertheless it has been justly called a Reform Bill, because it so redistributed the representation, that the will of the people could be adequately expressed through their representatives by that redistribution. Although I felt the force and the beauty of the speech addressed to this House by the right hon. gentleman the member for Calne; although I rejoice that one of the small boroughs has vindicated its claim to the long period of existence they have enjoyed by sending to this House a gentleman who is capable of calling up to the memory of the House the nature of the Constitution under which this country has risen to its present greatness, as well as of showing us how fallacious are some of the views which militate against the basis of that Constitution, my position is different as representing a constituency which was created in its present dimensions by the Act of 1832, and is intimately connected by representation with the town of Birmingham, which is from hour to hour increasing in population at the rate of six thousand a year; and seeing that, in the case of Birmingham, and in the case of North Warwickshire, the electoral body increases in a greater ratio than the population by a natural process, I feel it my duty to enter my protest, as I shall do by voting for the amendment of the noble lord the member for Chester, against any measure which proposes to extend the franchise without adapting the representation to the extended franchise that it creates, without granting increased representation to populous districts such as that of which I share the representation, in which the constituencies are increased by a natural process, through which the working classes have already a large share by occupation in the boroughs, and in the counties by the acquirement of freeholds, which I rejoice to say have been greatly extended. And here I beg to remind the House that I objected to the bill of Lord Derby's Government in 1859, because I could not consent to the inhabitants of Birmingham or other towns who might hold or acquire freeholds in those towns being deprived of the right of sharing in the election of the members for North Warwickshire, one of whom it has been my privilege to be for so many years. But to state the main grounds of my objection to this measure, I must refer to the figures which have been presented to the House. In 1862 I moved for a return showing the population, the property, the number of houses, and the allocation of seats in boroughs and counties at that time. Well, what is now the state of things in England and Wales which this measure does nothing to meet? I find that the population of the counties, according to the returns laid before the House, with the view of inducing the house to adopt this measure, is 11,427,655; that the gross estimated rental of the counties is £67,010,983; that the number of electors for the counties is 542,633, and yet that they are represented by only 162 members in this House. On the other hand I find, with regard to the boroughs, that they have a population of only 9,326,709; that the gross estimated rental of the property in boroughs is only £41,068,325; that the number of electors is 514,026; and that they are represented in this House by not less than 334 members. This is the position of the population, the property, the number of electors, and the number of representatives in England and Wales. Now take the houses: I find that in the counties—that is, outside the boroughs—there are 2,290,061 houses, whilst in the boroughs there are only 1,449,444 houses. I must say, therefore, that I cannot consent to any bill for the reduction of the franchise, that I cannot consent to any step in the direction of Reform, until Her Majesty's Government give proof that it is their serious intention in some degree to mitigate this gross anomaly—an anomaly which exists neither in the representation of Scotland nor that of Ireland—an anomaly which is confined to England and Wales alone. Until, sir, I have some proof that Her Majesty's Government will consider this gross anomaly I cannot consent to any bill which assumes to be, though this measure does not deserve the title of being, a Reform Bill. The hon. member for Birmingham once said that the proposal which I made to consider this gross anomaly was a most Democratic proposal. Sir, I have no insane fear of Democracy; the basis of this House is Democratic; but does my anxiety to consider this gross anomaly deserve to be called Democratic? Lord Chatham was not a Democratic Minister, yet he proposed to disfranchise largely, and to transfer 100 seats to the counties. In 1783 Mr. Pitt introduced a proposal for Reform, and what did it propose? To add considerably to the number of members for the counties, and to abolish a number of small and corrupt constituencies. But does the House consider that the noble lord at the head of the Government, that the late Lord Palmerston, that the late Sir James Graham, and that the late Lord Aberdeen were Democratic statesmen? Yet, when Lord Aberdeen was at the head of a Government, in which were associated the noble earl the present Prime Minister, the late Sir James Graham, and the late Lord Palmerston—three of the statesmen who passed the Reform Act of 1832—and when in 1854 that Government proposed a Reform Bill, they proposed to deal with more than sixty seats, to transfer more than sixty seats; and so sensible were they of the anomaly I have pointed out, that they proposed to give not less than forty-six additional members to the majority of the people in counties. And the house itself has acted in a certain degree upon the same principle. For of the seats which have been taken from disfranchised boroughs three have been given to Yorkshire and Lancashire. Sir, I am quite willing to consider the question of a reduction of the franchise. I was in favour of the plan of the right hon. gentleman the member for Oxfordshire, and of the right hon. gentleman the member for Cambridge University, in 1859. I thought they were right in proposing that the franchise in the boroughs should be reduced to £8, and that in counties should be reduced to £20. I say, then that I am ready to consider the question of a reduction of the franchise; but, as one of the few members in this House who represent the majority of the people, I will consent to no bill purporting to be a Reform Bill which does not in some degree remove this gross anomaly—that the majority of the people in England and Wales are represented by a number of members in this House which, if you subtract from the 162 county members those who would properly fall to the share of the urban voters for the counties, does not exceed 100, or less than one-sixth of the whole House. Sir, I repeat, and with this observation I conclude what I have to say, that I never will give my consent to any measure of Reform that does not propose in some degree to mitigate this gross anomaly.

EXPERIENCE, CAPITAL, AND SECURITY.

At the Freshwell Labourers' Friend Society's Meeting, Lieut.-Col. **Brise**, the President of the Society, said: It was the custom very often to commence their observations by congratulating those present, or perhaps condoling with them, on the agricultural prospects of the time; but really on the present occasion he hardly knew what to say on that point, for he heard such a variety of opinions as to the result of the late harvest. He had so often ventured an opinion on the subject and been contradicted, and had so often heard contradicted the opinions of others, that he hardly knew at present what the result was. It seemed to him to be a sort of hybrid result—in some parts very fair and in others quite the contrary. On the whole our crop of corn was not up to the average, but below it, and in some parts very much so; but prices were very satisfactory, and therefore the prospects of some of his agricultural friends were not so gloomy as when he last had the pleasure of speaking to this toast. There were no doubt some who were not at all satisfied with their prospects. There were some who must take all their wheat to pay their rent; while the others would take all their barley, and the horses all their oats, so that they would have very little left indeed. But he hoped that was not the condition of any in that room. They must remember that the labour market was not altogether governed by the law of supply and demand, and that labour was as necessary to capital as capital to labour. What would labour be without capital? What would capital be without labour? A few evenings ago he was at a meeting of this description in another part of the county, where the question was asked, How was it that with a sufficient acreage of land and a sufficient labouring population to cultivate the acreage, we did not grow sufficient food to feed the people of this country? And this gave rise to two questions, the first being What was the reason we did not grow sufficient food for the people, so as to be independent of foreign countries? And the reason given was that there was an insufficiency of capital throughout the country. There were, no doubt, those who were of opinion that it would be advantageous to the country to grow food enough for the people, but they believed it was not to be done by the present generation of farmers. They would like to see all the old farms, the old associations, and the old squires laid on one side, and the country peopled with monied men from the agricultural districts. Well, the question then arose, would these gentlemen grow more corn than the present race of farmers? (No, no.) Would they be enabled to feed the country better than it was fed at the present moment? Well, there was no doubt that experience was as valuable in farming as capital; and he firmly believed himself that the experience of the practical farmer, even if he had insufficient capital, was better able to produce corn even than a large amount of capital put into the land without experience; and if they came to look at it in that light the experienced farmer would, they must admit, grow a quarter of an acre more corn on his occupation than an inexperienced farmer. But there was one way of increasing the production of the land without extirpating the present race of farmers; and though in most cases the agriculturists had sufficient capital to farm their land, nevertheless there were cases where occupiers had large holdings and insufficient capital to work them with; and in these cases, he was convinced, as he had said before, that they would find it much more to their own advantage to farm less land and farm it well, while at the same time in so doing they would be conferring an advantage on the farmer generally, for there would be more land in the market, and, therefore, rents would be proportionately lower and easier. He thought there was one more qualification besides capital and experience that was necessary to the occupiers of land, and that was security. Arthur Young had happily said, "Let them give a man secure possession of a hard rock and he would convert it into a garden; but give him a nine years' lease of a garden and he would turn it into a desert." Well, there was some truth in that. Speaking, as he would act himself if he were a tenant farmer, he would not like to take a farm without a lease, and for this reason—he might have the utmost confidence in the landlord or his agent; but the landlord might change his agent, or another landlord might succeed, and affairs assume a very different position, though no doubt there were exceptions to this which tended to show the impossibility, as in all other farming operations, of laying down any one fixed rule. There were times, perhaps, when it was advantageous to the farmer to take land without lease, and there could be no doubt whatever that the system of leasing should be applied to every case as it arose, and must depend on certain positions, in some cases on the position, prospects, and wealth of the landlord; in others in the constitution of the land, and in others on the skill and enterprise of the tenant. He considered the three qualifications he had mentioned—experience, capital, and security—as the most important and material to agricultural interests.

THE FARMERS OF PROGRESS.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

It has long been usual to boast of the English farmers, and this was perfectly just; for it is incontestable that they have taken the lead in the improvement of agriculture in their country. Circumstances have doubtless been eminently favourable to them. They have had vast advantages, and especially those favouring to the highest pitch of the breeding and rearing of cattle. For the greater part they have had excellent landlords, not hesitating to execute at their own expense the permanent improvements. In short, free as they were from the "demon of property," they have had the full disposable use of their capital, which thereby not being transferred in the purchase of land, has been exclusively appropriated to the cultivation of the soil properly so called. Thus, everything has combined to enable the English farmer to take the lead, and we must acknowledge that they have done this in the improvement of agriculture to the full extent of their ability.

But we must be allowed to say that now the French farmers of the present period have amply taken their revenge. They also have their well-informed, energetic class eager for improvement, anxious to see what is doing in the best cultivated countries, travelling, reading, discussing its interests—holding, in short, in society an elevated position, which has not a little contributed to promote the taste for and the habits of rural life in its widest sense. For a long time, and this was at its commencement, this class having acquired competence, if not wealth, was anxious to bring up their sons to a so-called liberal profession. Their point of honour was to make them notaries, advocates, physicians, officers, public functionaries, &c.; whilst, with the same object in view, their daughters were married and portioned off to citizens. But they have now abandoned this erroneous system, and the farmer's sons become farmers in their turn; and if the daughters still yield to the force of habit, this is compensated by the conquests that the farm makes in the city by the young city dames taking farmers for husbands, not less remarkable for their excellent education, than by their aptitude to identify themselves with the new society in which they are called to move. All these changes in rural manners have an important significance. It is the agriculture of former times, in which the farmer called his landlord "Our master," that is decidedly being abandoned; and it is the new husbandry asserting its power by showing at its head, and not without very pardonable pride, a class of men who are the living demonstration of the profits and enjoyments attached in the present day to an agricultural life.

The farmer of progress is one of the types that best characterise our modern society. The cities had formerly their *bourgeoisie* (wealthy citizens), who by dint of labour and economy had been able to acquire a standing in the country. The rural districts were destitute of this middle class, which was able to hold its own position, because it was enlightened and independent enough not to be always the victim of the fraudulent. It was evidently nothing but the formation of a class of rich and educated farmers that could introduce into our rural parts an element which commenced, for example, with the emancipation of the rural population. This element has been produced, and works side by side with small farming, which of itself also is power in France. Let us carefully avoid being exclusives. In all large societies various modes of action are required. The absolute often engenders the decadence of a nation. In order to obtain the maximum of useful results of soils, climates, and human aptitude, it requires only the combination of mingled powers balanced among themselves, and measuring each its own importance by its social utility, its efforts, and its sources. Such is the large husbandry of the farmers with great capitals, and the small husbandry of the working farmers. Each will develope itself in proportion to its means of success.

The more farming with large capital increases, the more reason will there be to hope that farming will become of importance. At the present time, a farm of two hundred hectares, in a good country, sells for from 4,000f. to 5,000f. per hectare (or from £67 to £84 per acre)—say, 800,000f. or 1,000,000f. Now, in order to work this farm by extensive culture, with a distillery, we estimate that it will require a working capital of from 800f. to 1,000f. per hectare; say, then, an aggregate of from 160,000f. to 200,000f. Consequently, the owner who wishes to make such a farm profitable by working it himself ought to be more than a millionaire, otherwise he will always be hampered for want of money, and will be the slave, instead of the master, of the land; and while circumstances will dictate a very active cultivation, his capital—too small—will necessitate a course of husbandry below the circumstances, and he will inevitably become indebted and ruined.

Tenant-farming fortunately resolves this problem. It brings before us two parties; the one gives up his land upon lease—the other charges himself with the cultivation, and throws into it the whole of his capital. From hence, with people who seek the improvement of the soil, everything becomes easy: each fulfils his task, and the land gains by it.

We understood all the measures of prudence in the law, when the farmers consisted of poor devils who could give no guarantee, no material tie. Thus, the crops and the chattels and utensils of the farm were not too much to answer to leaseholds. But what a difference when compared with rich farmers paying rents of 100f. to 150f. per hectare, fattening thousands of sheep or hundreds of cattle in a winter, harvesting large crops of wheat, roots, and forage, and putting into operation a capital of one hundred or two hundred thousand francs.

Assuredly, such farmers as the first ought to be avoided by every landowner, for they can only practise an exhausting cultivation. Their interest calls for an improving husbandry—one that leaves the land at the end of a lease richer than at its beginning. Not comprehending that, compels them, for want of equitable agreements, to take from the soil, on leaving it, what they have put into it: in other words, as a final result, to destroy their work of improvement, for want of knowing the difference between land in full profit and the same exhausted.

Many proprietors have fully comprehended this situation. Having had the good fortune to contract with improving tenants, they have thought it good policy to take upon themselves the permanent improvements—that is to say, such as will remain irremovable in the land. Thus, these intelligent proprietors have, at their own expense, erected farm-buildings, drained, marled, drilled, and irrigated, only requiring the farmer to do the cartage, and to pay, in addition to the rent, an interest varying from three to five per cent. upon the permanent outlay.

What is the result? A very important one. The tenant, assured of sufficient buildings, no longer fears to increase these crops and cattle. Certain of operating upon a healthy soil, they do not hesitate to expend money upon it by heavy manuring. The more the proprietor fulfils his part, the more the tenant increases his efforts. And in the long-run, it often happens that such a farm, which, for a long time, was denounced on account of the number of tenants who left it ruined, is raised in public estimation to such a pitch that the only difficulty with the owner is to choose a tenant out of the numbers who apply for it on lease.

The "Crédit Foncier" would soon become a truly profitable institution to agriculture if the number of improving landlords increased in France. They charge it of lending to the cities and towns much more than to the country. In that respect, it only follows the market for capitals, which go where the demand exists, and where they are repaid at the time agreed on. And they will go to the land when the rural proprietors will employ themselves resolutely in the work of improvements, whether in cultivating the land themselves, or in uniting themselves with improving tenants. For large farming, the first of these conditions supposes millionaire proprietors: the second appears the most practical, and the most in accordance with our national disposition. It creates an important distinction in agricultural capitals—the one constituting the fortune of the proprietor, the other the capital of the farmer.

In proportion as the *Crédit Foncier* shall become so much more rural that the class of improving proprietors will be more numerous, so will it be for agricultural credit, the extent of which depends upon the increase in the number of improving tenants. To borrow for double the extent cultivated when each hectare has not the amount of capital required, is to take a passport for the country of ruin. But to borrow for double and triple the capital of every hectare, for the purpose of manuring, working, and harvesting at the maximum is another thing. In the first case, small crops afford only small profits; and it may even happen that the more land we hold the greater the risk of impoverishing ourselves. In the second case, large crops conduce to large profits, and when we gain 10 or 12 per cent. upon the culture we may be allowed to borrow at 5 or 6 per cent., provided that the periods of repayment coincide with those of the receipts of money. But it is a certain fact, that the position of a farmer who obtains credit, is so much the better that he cultivates land the owner of which does the permanent improvements. Such a farmer has certainly more capital at his disposal. He sinks nothing, and only operates for short terms. His capital is circulating in the first rank, being essentially an industrial capital.

We have seen proprietors who have had no reason to congratulate themselves on their improvements. They were anxious to proceed, or have associated themselves with tenants who proceed faster than the position of the country admits. The great law of demand and supply was true with the land as with the products. To create lands of 1,000f. per hectare in countries where lands of 500f. are alone in demand for purchasers and tenants, is to create a nominal value which has not the sanction of public opinion, and must be subjected to depreciation. Beyond a doubt, things now change far more rapidly than they formerly did; and a country which actively employs itself in improving the means of communication and thus increasing its prosperity, becomes the theatre, more or less rapid, of changes in the value of land, of hand-labour, and of its produce. Nor is it less certain that these changes demand more or less the acquiescence of the times. Such a country progresses very fast, whilst another is very slow: from thence, consequently, in some cases from hopes surpassed, at others from hopes disappointed; and there is no occasion to say more in order to explain how certain improving proprietors have succeeded whilst others have failed.

What are we to say of these histories of success and reverses? They certainly teach us more than one important lesson. Minds disposed to believe that a multiplied addition of small secondary objects can counterbalance the influence of facts of the first importance, will timidly conclude from it that there is no scope for recommending great agricultural improvements. In our view of the matter it will be best to avoid taking too much part with these nervous people. There is one overwhelming truth that rules the whole case, namely, that European agriculture can only save itself by the improvement of the soil; and that if there are countries whose turn is not yet arrived, there are others in which husbandry has not been carried to its proper height of perfection. Countries over-peopled require to be relieved of the excess of rural population. Let the husbandmen of the north disperse themselves in the centre, the east and the west. The south alone is not migratory; it has its sun which attracts the inhabitants of the more temperate regions. But on the whole, if we freely return to agricultural life, it is to be presumed that the genius of colonisation will find in a great number of rural solitudes much land of greater value than has formerly been ascribed to them. The absence of roads and local demand struck them with sterility, although they surpass in natural fertility certain lands improved at a great expense in our districts of advanced husbandry. Let communications be formed, and population will follow. Let science and capital be introduced, and agricultural wealth will transform more than one district, admired by poets, who saw it only in passing, but never lived there.

Success, then, to our good tenant farmers. They have been the great promoters of artificial pastures, of the cultivation of roots, and manufacturing plants, of Merino sheep, and of precocious breeds of animals, distilleries, and agricultural implements. They have instituted in rural society a class which exercises, and will exercise more and more a beneficial influence over our destinies. The work has been worthily accomplished. Welcome to the labourers of the first hour; welcome also, welcome always to those who shall come the next day to crown the edifice. Nor shall the sympathetic co-operation of the *Journal of Practical Agriculture* be withheld from them: for one of the first objects that Journal has in view, is to promote the triumph between the landlords and the tenant farmers of the fruitful principle of a union of interests over the disastrous principle of antagonism. This is, in our opinion, one of the most powerful means of contributing, by the press, to the progress of our agriculture. E. LECOUTEUX.

WHAT WOMEN CAN DO.

Among the strangers in Philadelphia recently, were two ladies from Martinsburg, West Virginia. They were purchasing a seed drill, a mowing machine, and other agricultural implements, whose cost in the aggregate was about 800 dols. Their home was very close to the theatre of the late war. Between the two contending armies their houses and barns were burned, their horses and cattle driven off, their only brother conscripted into the rebel army, and themselves left utterly destitute and homeless. Any one who, seeing a young lady such as we saw yesterday, had been told that she had personally ploughed and planted many acres of land, would have laughed to scorn the party so informing him. Such, however is literally the case. We learned the facts from a gentleman residing in the vicinity. The smoking ruins of the farm upon which these young people resided had scarcely cooled when the neighbours clubbed together, built them a log house, and extemporized a sort of barn. Horses were loaned to them, and the girls with their own hands ploughed the ground and seeded it with corn. The crop grew apace, and with their own hands they harvested it. They sold it to good advantage. They had owned forty-seven negro slaves. Some of these went into the Union army, others deserted the locality. The girls were left alone to battle with the vicissitudes of the war.

Our informant, whose respectability is beyond a question, says that these girls produced by their works in the field more decided and productive results than were accomplished by the entire gang of slaves. They toiled for three years, and now have a comfortable house and most substantial barns upon their property, while improvements have been made upon it to an extent that makes it of considerably more value than before the torch of conflicting armies reduced its building to ashes. One of the young ladies has since married, but the others still do duty as their own "overseers," and they themselves purchased yesterday, and directed the shipment of the agricultural implements to which we have above referred. The wonder to the dealer was that a lady, delicately-gloved and attired as though she had never overstepped the bounds of the boudoir, should descant experimentally and intelligently upon the respective merits of the different reaping machines, and upon the comparative values of the different patents for threshing-out the cereals.

These young ladies were educated in Philadelphia, and are well known to many of our best people.—*Philadelphia North American.*

AGRICULTURE AND AGRICULTURAL STATISTICS.

At the annual meeting of the Witheridge (North Devon) Agricultural Association on Monday, Oct. 22, the Right Hon. Sir S. NORTHCOTE, M.P., the President of the Board of Trade, said he came to Witheridge with some doubt on his mind as to the beneficial effects of ploughing matches—a subject upon which much diversity of opinion existed. Having come by no means prejudiced in their favour, what he had seen that day convinced him that agricultural societies were useful and valuable institutions. In the first place, the spirit of emulation engendered among their young men, who were, by means of the All England prize, brought into competition with distinguished ploughmen who were able to show them the highest specimens of the art, must do a great deal towards promoting the special work which they were endeavouring to forward. They had matches of all kinds—rifle, archery, horse racing—and surely in so useful and important a work as that of ploughing, the same principle could be brought into play with advantage. It must be satisfactory to them to know that they had men among them who could hold their own against those who came from a distance. On being shown the work of the latter gentlemen (who were supposed to show them how their ploughing should be done), and afterwards work contiguous thereto of persons belonging to the district, he (the riggt hon. baronet) could not but see that, although they had no doubt something to learn, the ploughmen of Witheridge were not by any means behind. The establishment of ploughing matches had done a great deal towards elevating the standard of that kind of work. If they looked, therefore, at the effect of agricultural associations on the ploughing of the ground alone they were obviously well worth keeping up. But they must also consider the indirect advantages of these meetings. They caused large bodies of men interested in the practical work of agriculture to assemble—not as mere theorists—but as men who are conscious of the worthlessness of theoretical knowledge simply, and as men who were fully alive to the importance of conducting their business so as to make a living out of it. They came together to compare ideas one with another, to watch the operations of the competitors, and at the same time to converse upon subjects which had a common interest for all. Such meetings as these, if they were conducted in a liberal spirit, must be productive of great good. Societies, such as they sometimes found in small places, which were formed merely for the purpose of keeping alive local prejudices, would do harm instead of good; but where they had meetings of men who were prepared to look boldly at their position, to the wants which they experienced, to the difficulties which existed, and to the means of meeting those difficulties—if they met to express and submit for discussion, as Captain Davy had, opinions, perhaps, with which their audience might differ—these meetings, he was convinced, would result in benefit to all. The agricultural interest of England was now in rather a critical position—and not only the agricultural interest, but all the interests which depended upon the employment of labour. There was a great difficulty just now in obtaining a sufficient supply of properly-trained labourers for nearly every branch of industry. Not very long ago he had the good fortune to be present at a meeting in Liverpool, and while there he had occasion to see what was going on among our enterprising merchants, especially those engaged in the commercial shipping of this country; and there he met with the same kind of complaint as he found in the rural districts. There was a great difficulty in obtaining a supply of seamen of the same class which formerly manned our commercial navy. Superior advantages were offered in so many other occupations, that, in spite of the high rate of wages given, the men failed to come forward in sufficient numbers, and those who did were not so well trained nor so ready to do their duty as formerly. He (Sir Stafford) was asked whether it was not possible to devise some measures for remedying this evil; and it was a question of such great national interest that public attention would inevitably have to be given to it. But he ventured to say to those gentlemen who spoke to him on the subject, "You may naturally deem this matter one of national importance, and that it is desirable Government should assist in obtaining a supply of seamen for your ships; but recollect, the difficulty of which you complain does not exist in your branch of industry alone—there are other classes who also complain of a deficiency in the supply of labour; and, if we endeavour to increase that supply by artificial means, the agricultural interest may justly complain that we are drawing labourers away from them." Now, he recommended that persons engaged in every kind of business, and especially in one so important as that of agriculture, should frequently meet together and endeavour as far as possible by mutual consultation to discover what were their difficulties, and in what way those difficulties were to be met. They must remember that many advantages might be offered to the labourer which might act as a counterpoise to the inducements of higher wages in other trades. If they took upon themselves the duty of making his position as comfortable and advantageous as possible, they would thereby find for themselves the best mode of procuring that supply which was so essentially necessary for the furtherance of their own interests. One efficient was undoubtedly better than two or three slovenly and inefficient labourers; therefore, their first aim should be to make their situations as attractive as possible to the best labourers, for those were the men who went away, while the least efficient remained at home. They could not fight against the great law of supply and demand. If men found that by going a certain distance from home and engaging in other occupations they could obtain better livelihoods and more favourable positions in society, it was no use preaching to them that they ought to stay where they were. It was obviously their duty to induce labourers to remain at home by making them more comfortable and rendering them more efficient. This opened up the question between landlord and tenant, and was one of the points on which meetings of that kind were extremely useful. The tenant-farmers, who were endeavouring to maintain themselves and reap a profit out of the cultivation of the land, should compare notes with their landlords, and endeavour to ascertain what were the matters in which they could best assist their labourers. He completely recognized the corresponding duty on the part of the landlord as compared with the duty of the tenant. But it was of no use meeting together to make general observations, or to complain that they could not do their part because the landlords did not do theirs. Practical men should make up their minds as to what their landlord should be called upon to do; because, however well disposed a landowner might be to do everything necessary for the advantage of his tenant, he was often at a loss in which way best to apply his money. Sometimes, having been taken by some theory advanced in a periodical or by a crochety professor, he laid out a great deal of money, but found out, after all, that it did not answer, and that he had much better have kept the money in his pocket. But where the landlord had intelligent tenants, who would show him that they were doing their part—that they required better farm-buildings, improved cottages for their labourers, and assistance in draining the land—who would show him that they understood what they were about—that if he laid out his capital under their advice it would be productive of advantage in a great number of ways—then he (Sir Stafford) believed landlords would always be found ready to do their duty. If they did not, then let them bear the responsibility—he had no desire to screen them. In developing a science like that of agriculture, they must bear in mind two points. It was important to study to some extent general principles, to keep themselves acquainted with the general march of events, and to be informed of the condition of agriculture and of all interests connected with it, both in this and other countries. On the other hand, it was also necessary that they should observe the local conditions under which they lived; because a man farming an estate at Witheridge was not farming an estate in general: he must not treat the matter tike a professor who was dealing with agriculture as a science. With the local knowledge supplied by a practical acquaintance with the estate, he ought to know not what land in general would do, but what his own land in particular would do—not what were the implements employed and the mode of cultivation adopted in other parts, but what were the implements and what the culture most suited to his particular farm. But he could not do this without a general knowledge of the principles upon which operations were conducted elsewhere; and the knowledge of his own land enabled him to judge how far those principles were applicable to himself. This gave him (the speaker) an opportunity of saying a word in connexion with his department of Government—he referred to the collection of agricultural statistics. It was important for the interests not only of the agricultural, but of every other portion of the community, that full and correct information should be obtained of the progress of agriculture in different parts of the country. Many gentlemen supposed that the questions put to them were addressed in a prying spirit, in order to obtain information with regard to individual concerns. This was quite a mistake; the only motive of Government was to ascertain the condition of agriculture at the present time, what the amount of acreage, what classes of crops were being raised, and what amount of stock was being kept. It was desirable to obtain that information from year to year, so as to mark the progress of the country, and to compare one portion with another. Some persons asked what was the use of this information? Doubtless, in a single year the statistics desired would be of very little use; but their utility was obvious, when collected during a series of years. Take, for instance, the question raised so many years ago—the feeding of cattle upon root-crops. It would have been interesting if they could have seen how far the breaking up of the country for the cultivation of root-crops affected the number of cattle. And then, again, when so much of the land was laid down to grass, it would have been useful to see how the introduction of artificial manures and the adoption of particular systems of husbandry had an increased effect upon the produce of the country. How to obtain this information in the least unpalatable manner to those called upon to supply, it was a matter which had for the last thirty years been under the consideration of the Government. Thirty years ago the first attempt was made to obtain agricultural statistics; and the information was in one or two counties sought by application to the clergy. They refused; and afterwards, in other counties, similar applications were made to Boards of Guardians, but they also would not comply with the request of Government. It was true the application was favourably received in Norfolk; but, on the whole, great reluctance was manifested to make use of that machinery. Then it was attempted to make the matter compulsory; but the bills brought into Parliament for that purpose always failed. A Committee of the House of Lords sat, inquired into the subject, and reported upon it; and now this last attempt had been made to obtain the information through the intervention of the officers of Excise. So far, it seemed to be successful. He (the speaker) had read the returns of stock, with the exception of a few instances in which the numbers had been estimated. Nine-tenths of the returns were made very freely, having been a little stimulated, perhaps, in some parts, by the presence of the cattle-plague. The acreage returns were not complete, but in many cases he believed the reports were very good. He hoped they would consider this subject as being one which affected the interests of the whole country. He argued that, as farmers were interested in the statistics connected with every other trade, with the exports and imports of the country, and with the produce of America, France, and other parts of the world, they ought, in mere fairness, to furnish information relating to themselves. He asked them to talk over the matter among themselves; and if they thought the present mode of collecting the statistics objectionable, they should try to suggest a better. These were points on which the Government were in the dark: they were feeling their way. It was said that it would not do to collect statistical information through the police, the clergy, or boards of guardians; and, now they were trying the revenue officers, they were told that would not do also. Now Government asked, "Is there any way? or are you determined that this information shall not be forthcoming? And, if you are, let us know what are your reasons, if you have any?" for he confessed he was not able to arrive at any conclusion with regard to the objections against giving agricultural statistics. He felt deeply interested in the welfare of British agriculture. He was perfectly certain that at the present time it was in a critical position, and he was also quite certain that the way to overcome the difficulties with which they had to contend was to encourage the most perfect freedom of intercommunication between all classes, to disclose with readiness the difficulties which arose, and to meet all questions in a liberal and candid spirit, making at the same time proper allowance for local views, local knowledge, and even (if it be so) local prejudice, because he believed local prejudice to be generally founded upon something that had truth at the bottom.

THE FUTURE OF AGRICULTURE.

At the Norton Farmers' Club some very practical speeches were made.

Mr. Jackson, M.P., for North Derbyshire, said he had been in many countries in the course of his life, and had seen the source of wealth in many of them had sprung from mother earth. It was no matter how well they managed, if they treated mother earth well, she will repay them fourfold. He had been a keen observer of the various modes of agriculture in various parts of the world, and he could say England has yet a great deal to do; that though she had done more than other countries, there are other countries who have done more than she. She ought not to be last, and the farmers of England should not rest until they had by perseverance and labour become almost if not in advance of the other nations of the earth. There were many things we do not produce. Legislation has prevented it. They say the climate stops it. He thought when he looked at the various flowers exhibited that day—what had they done? They had acclimatised the dahlia; they had acclimatised the fuschia; and if they went into Chatsworth and saw the various plants acclimatised they would never tell him they could not acclimatise any plant if they applied themselves to it. The middle classes had been termed the back bone of England, but he contended the tillers of the soil were the back bone of the country.

Mr. Fowler, after some general observations on the close union that existed between the commercial and the agricultural classes, referred to the course of legislation during the last thirty years as it affected the great staple of our agriculture—corn. Mr. Jackson and the political party with whom he acted no doubt claimed the credit of having repealed the corn laws, and it was a wise and excellent measure; but there was no room to doubt that, in a short time, if Parliament had not taken the course it did, it would have been compelled to do so by the popular will. The effect upon agriculture by the repeal of those laws was that our farmers were exposed to the competition of the whole world, and that competition became more severe in proportion as other countries developed their means of internal transit, and so brought their productions nearer to the English market. The English farmer was also placed at a disadvantage by the increased cost of labour, as compared with the prices paid in other countries; but this was met to some extent by the introduction of labour-saving machines. There was nothing more interesting than to see in a large agricultural show the ingenuity of the devices for saving labour in farming operations. The practical end to which he wished to direct their attention was this. They were at a disadvantage in this district, first of all by the high price of labour, and secondly by the smallness of the enclosures, which would not allow them to take advantage to the full extent of reaping machines, steam ploughs, and other necessary implements. But if they were thus at a disadvantage in regard to growing corn, they were compensated in another way which he would point out, nnmely, by factlities for the production of beef and mutton. The importation of fat cattle had been to a great extent a failure. A fat beast was a delicate animal, and could not bear the rough usage inseparable from a sea voyage and a long land journey; and he did not think with all the efforts that could be made, that the importation of cattle or dead meat would ever assume very large proportions. That being so, it was obvious that the English farmers could compensate themselves for the competition in corn; and he drew the attention of the company to the capabilities of this district for grazing purposes, and the production of milk and butter, to the partial exclusion of corn. No doubt he would be told, "We must grow such things as our farm are adapted for." To that he offered no objection. In the Peak of Derbyshire it would be idle to attempt to grow wheat, and in some retentive clay in the south, where the natural grasses found no home, the peculiarities of the soil rendered certain operations of farming impossible. He farmed 250 acres. and he was fully satisfied that his best policy was to produce meat rather than corn, and he advised his hearers to follow his example, and to find in that way a compensation for the very little profit they could now extract out of corn.

Mr. Jackson said he felt very strongly upon this subject. This part of Derbyshire was not suited to grow wheat, but the country had every facility for an immense production of beef and mutton. The hon. member proceeded to call the attention of the company to the vast importance of a branch of farming which was generally overlooked in this country—he alluded to the breeding of poultry. The enormous importation of eggs showed the extent of the demand. A Liverpool banker told him that he had cashed cheques to the extent of £400,000 for eggs alone, and a London merchant pointed out to him the enormous extent of the traffic. That was a direct loss ta the farmers of England; and he suggested that if they would turn their attention to the breeding of poultry they would find that with very little care and trouble they would receive immense benefit, and vast sums of money now paid to Continental breeders would be retained in England. He spoke of the importance attached in Ireland, Italy, and other countries to the rearing of poultry, and urged the farmers to commit that part of their business to the sole charge of their wives and daughters. They might depend upon it that a rich source of profit was being at present neglected.

LABOURERS' LODGINGS AND WAGES.

The following correspondence has recently appeared in *The Times*:—

Sir,—You were kind enough last month to publish a letter which I addressed to you respecting the ill-conditioned dwellings and low wages of agricultural labourers in my own parish, as well as in other parts of the county of Devon and some other counties. You will, perhaps, be as much surprised, and certainly as much pleased, as I am with the result of that appeal to public opinion, and will not possibly be disinclined to publish this short account of it.

In a few days after the publication of that letter I received applications for labourers on very advantageous terms from various parts of the country where wages are high, and labourers, even on high wages, very scarce. I have already sent three families, and am on the point of sending two more, to one estate in the neighbourhood of Dublin, on the very liberal terms of payment of the whole expense of removal of the men with their wives and children, 14s. a-week wages, a furnished house and garden rent-free, and half the cost of a suit of working clothes for each man. I have two other families engaged for Yorkshire at Martinmas, at wages of 12s. 6d. a-week, house and garden rent-free, and part of the cost of removal allowed. I have an application from Berkshire at day wages of 11s. a-week, and piece wages during the summer of from 13s. to 20s. a-week; and from Hertfordshire for "a whole cargo" of labourers, at wages varying from 15s. to 18s. a-week, according to capability. Owing to the difficulty arising from the expense of removal when this is not provided for, and the fact that very many of the labourers in my neighbourhood are by the custom of the county legally bound to their employers till next Lady-day, it may be some time before men are found in a position to accept all the offers last mentioned. There is, however, no lack of will, but only of way; and, without doubt, at next Lady-day, when the term of last year's hiring will expire, unless the farmers generally are prepared, as some do now, to give better wages, abandon the truck system, pay in coin, and treat their labourers in all respects better, these will contrive in some way or other to raise the means of removal to those parts of the country in which they are now aware they can make the pleasant change from wages at 7s. or 8s. a-week, with deductions for house-rent and wet days, and the remainder partly paid in grist, to the comparative wealth of 15s. or 18s. wages a-week paid wholly in coin.

The agricultural labourers in the badly-paid districts are, as well as myself, deeply indebted to you for publishing my first letter. They are under great obligation also to those of your readers who have so promptly adopted the practical way above described of assisting me to compass my object. Free trade in labour is as fair for all parties as in everything else. Only there can be no such thing as free trade for the agricultural labourer, but rather he is completely at the mercy of the farmer as long as he is kept in ignorance of the existence of a better market for labour, or when he knows of it is hindered by extreme poverty from attempting to reach it. Such ignorance is now to a certain extent removed, and will no doubt be still more completely removed when accounts are received by their friends from those who have already changed their homes. As for the expense of removal, it would be well if all, as far as possible, who apply to me for labourers, would, as has been already done by some, offer to take either in whole or part that expense upon themselves. And it may not, perhaps, be too much to hope that some independent persons who take an interest in my work may be inclined to place a small fund at my disposal for this purpose. When all obstacles are thus removed, wages, like water, are sure to find their level, and free trade in agricultural labour will be really established.

Your obedient servant,
Edward Girdlestone, Canon of Bristol
Oct. 16. and Vicar of Halberton.

Sir,—In *The Times* of to-day is a letter from the Vicar of Halberton. I wish to ask the rev. gentleman if all that I see there comes of careful inquiry, and is penned after coolly weighing the evidence he writes on? Coming from such a quarter, to doubt the truth of the statements is absurd, if only they are the result of thought and not enthusiasm; but there is one passage so astounding that, for the sake of the class to which the letter is a hint, I hope it is misprinted or hastily written. Speaking of the advantages of the labourer removing to better-paid districts, he says:—"They can make the pleasant change from wages at 7s. or 8s. a-week, with deductions for house-rent and wet days, and the rest partly paid in grist, to the comparative wealth of 15s. or 18s. a-week paid wholly in coin." Does the writer mean to tell your readers that there is in Devonshire, or auywhere in Eugland or Scotland, from Cornwall to Caithness, from Liverpool to Dover, a district, or even a parish, where the gross earnings of a full-grown able-bodied agricultural labourer are as low as 7s. a-week? I cannot believe it. With the present price of agricultural produce, the general scarcity of labour, the extraordinary facility for cheap travelling, and the ever-present penny paper to tell the underpaid of better wages in other districts, is it possible that hands are to be had at 7s. or 8s. a-week, and that paid partly in kind, and pay house-rent and everything out of what is left?

I was brought up as an agriculturist, and reside and farm in a county where wages are not by any means equal to what is paid in the north; but I know of nothing like this. I am aware all manner of extraordinary things are said about agricultural labourers, and all manner of charges are brought against their employers on the score of scanty remuneration.

These are, however, for the most part anonymous communicaions to papers of a different grade to *The Times;* but when I ee a high dignitary in the Church signing his name to a statenent of this kind, I am forced to inquire if there is not some nistake. Few farmers care to enter upon a paper corresponlence, and thus many assertions pass as true from want of conradiction or correction. If the statements I allude to are corect, I can offer no explanation, and should not wish to be the lefender of a scale of wages apparently so unwarrantably beow the ordinary rate of remuneration; but if there is any nistake, I trust, for the sake of the Devonshire farmers, the Vicar of Halberton will give your readers some explanation. Unless something more is said on the subject, we may expect o hear of Mr. Bright "stumping" in Exeter, exhorting the abourers in the "garden of England" to force at the point of he pitchfork a higher standard of wages.

I am, Sir, yours obediently,
Playford, Ipswich, Oct. 18. HERMAN BIDDELL.

Canons' House, Bristol, Oct. 22.

SIR,—I have just read your letter in *The Times* of to-day. I am not at all surprised that my statements almost surpass your power of belief. Nevertheless, these statements are of acts which have passed daily before my eyes during the four ears I have been Vicar of Halberton. That parish contains early 8,000 acres, and there are in it, more or less, about 60 armers. With very few exceptions, 8s., and in some cases nly 7s., a-week, are the wages given to an able-bodied agriultural labourer. I believe the same scale of wages, or nearly o, prevails in a large part of the county of Devon, but I will nly vouch for what I personally know. In one family, for which I am thankful to say I have a better berth in prospect, he man—a young, strong, industrious fellow—has 8s. a-week wages if the weather be fine, from which 1s. 11d. is deducted or rent. So that he brings home never more than 6s. 1d. for ood, clothing, and fuel for his family, consisting of a wife, hree young children, and a fourth on the way. This is not y any means an uncommon case. In many instances deducon is made not only for rent but for grist at the farmer's rice, so that the labourer sometimes does not carry home more than 3s. 6d. a-week in coin. I know of two strong lads n one family, aged respectively 16 and 14, who receive from e farmer who employs them, the one 3s. 9d., the other 2s. d. a-week; and the farmer, reckoning these miserable earnngs of the two lads together with the father's wages, stated in public paper that he gave his labourers 14s. a-week. In ome cases the labourers are not allowed to keep pigs, lest they hould steal food for them from their masters, which I verily elieve they are far too honest under any circumstances to do. t is only in a very few instances, which I acknowledge with hankfulness, that in case of sickness or accident the farmers re really kind to their labourers, while it more generally happens that they leave them wholly to themselves, their club, if ey have one, the poor-rate, and me. It is seldom that they n get even a pint of milk from their employer. A shepherd ear me broke his ribs in his master's service. Owing to his ing shepherd, he had his house rent-free, in addition to his . wages. But during his illness his rent was stopped out of s son's wages. You will see, then, that by mentioning the re amount of wages only, without the addition of such parculars as I have now supplied, I have rather understated than erstated the case. I send you a copy of an address I lately rculated among my parishioners, that you may see the sort of ay in which a large number of Devonshire farmers have in e enlightened year 1866 resented my attempt to improve the ndition of the labourer. I am happy to say, however, that e work of emigration is going on steadily. Those labourers hom I have succeeded in removing to other places write e word that nothing would induce them to return to Halrton.

I have also already received £5 in answer to my appeal in y last letter in *The Times* for a small fund to defray the cost the removal of labourers. I hope I may yet receive more, ldressed to me at Canons' House, Bristol, where my duties at e cathedral oblige me at present to reside.

Your obedient servant,
EDWARD GIRDLESTONE, Canon of Bristol,
and Vicar of Halberton.
To Herman Biddell, Esq.

SIR,—I reside in a small agricultural parish in Hampshire. I have this moment made inquiry of two of my labourers, and I find that the wage now received by an able-bodied labourer, when engaged in ordinary work, is 9s. a-week. Out of this they have to pay 1s. a-week for house-rent—one of my informants, receiving no better wages than the others, pays £4 per annum. The labourer is generally paid for wet days—always when at work; but sometimes there is no work for him, and sometimes, I imagine, he prefers remaining at home, thinking that, with the wear and tear of clothes and with the personal discomfort, staying at home is the most economical plan.

I know, certainly, that for some time during the past winter the wages were only 8s. per week, and the wife of one of the labourers remembers them at 7s. within the last few years. There is no ale, cider, or any other emolument given.

It is possible that, after this, Mr. Biddell may really believe that hands are to be procured at the paltry sum of 7s. or 8s. per week. Your obedient servant,
Oct. 23. THE VICAR.

MR. KEKEWICH, one of the Members for South Devon, said, at Woodbury, during the past week, "I have seen with some degree of pain a letter in the leading journal of the country, stating that in this county landlords give the most niggardly wages to their labourers. I cannot endorse that opinion: I don't believe that in this county labourers are badly paid. Some time since, I took upon myself to make some inquiries on the subject in the district for which I am an ex-officio Guardian, and I found that the wages paid to the labourer were by no means as low as they were represented, viz., 7s. per week. I know that the occupiers of land in my own district are giving 10s. and 11s. per week besides liquor (a voice: "And 12s.") I know there are many good labourers in my district, working by piece, who receive from 12s. to 15s. But, let me tell you, they are very good labourers; and I do not see why a bad labourer should be paid the same wages as a man who performs his task well. The labourer is worthy of his hire, but he must be paid according to his worth. Then, we are told that the labourers will leave the county; but I have very great doubt whether they will get better wages elsewhere. There are great advantages which the labourer has in this county—he has his house at much lower rent than the labourer in other parts of England. It is not for me to dictate what rent a Devonshire labourer should pay; but perhaps 1s. a-week is as much as he can pay for a cottage with a good garden attached. In other parts the labourers receive 12s. or 14s. a-week against 10s. given here, but then they have to pay £5 or £6 a-year, and even more, for rent. Therefore, I think the labourer in this county is not badly paid. I do not mean to say that he is paid as well as he ought to be. That is quite a different question; but that he is paid small wages on which he cannot live I most absolutely deny. We are told that the labourers go away. What! go away? Quit their county? Leave all the associations of their parish—their native place? No, gentlemen; if we think the labourer has not sufficient wages in order that he may be retained on the soil on which he was born, then I beseech you to raise his wages, and I myself will do the same."

NAILS, NUTS, SCREWS AND BOLTS.—One of the most component parts of a good farmer is mechanical ingenuity. Some lose half a day's time, for want of knowing how to repair a breakage, which an ingenious person could do in five minutes. A team and two or three men are sometimes stopped a whole day, at a critical season, for want of a little mechanical skill. It is well for every farmer to have at hand the facilities for repairing. In addition to the more common tools, he should keep a supply of nails of different sizes, screws, bolts, and nuts. Common cut nails are too brittle for repairing implements, or for other similar purposes. Buy only the very best and anneal them, and they will answer all the ordinary purposes of the best wrought nails. To anneal, all that is necessary is to heat them red hot in a common fire, and cool gradually. Let them cool, for instance, by remaining in the fire, while it burns down and goes out. One such nail, well clenched, will be worth half a dozen unannealed. Nothing is more common than for a farmer to visit the blacksmith shop to get a broken or lost bolt or rivet inserted, and often a single nut on a bolt. This must be paid for and much time is lost. By providing a supply of bolts nuts and rivets much trouble may be saved. They may be purchased wholesale at a low rate. These should all be kept in shallow boxes, with compartments made for the purpose furnished with a bow-handle for convenience in carrying them. One box, with half a dozen divisions, may be appropriated to nails of different sizes; and another, with as many compartments, to screws, bolts, rivets, etc. Every farmer should keep on hand a supply of copper wire, and small pieces of sheet copper or copper straps. Copper wire is better than annealed iron wire; it is almost as flexible as twine, and may be bent and twisted as desired; and it will not rust. Copper straps nailed a cross or around a fracture or split in any wooded article, will strengthen it in a thorough manner.—*S. E. Todd.*

THE INTERCHANGE OF DISEASE BETWEEN MAN AND ANIMALS.

It has occurred to us that since so much has been said and written of late on the diseases of cattle—pleuro-pneumonia, rinderpest, fluke, trichina, and what not—a very appropriate sequel might be found in tracing the influence which such diseases are likely to have on the human frame. Though, like good Christians, we keep the fact out of sight, it is nevertheless true that all our anxiety about the health of the animal creation is selfish at bottom. It is only the diseases of domestic animals we pay any attention to; wild ones may suffer as much as ever, and die off as fast as ever, and welcome. Of the domestic animals, we are most concerned about those which are likely to become conducive to our stomachic comfort—oxen and pigs rather than horses or dogs, though why the former should have obtained precedence of the latter it is hard to say. Till within the last half-century there was hardly any such thing as veterinary science. The animal constitution was ignored almost as much as the animal soul. There was no lack of disease, however; and since it began to be studied in earnest it has started some curious speculations—for as yet they are nothing more—as to the pathological relations of the human and the brute creation. A savan read a paper on this subject some time ago before the Society of Arts, which, as a specimen of the romance of science, is well worthy of reproduction in a popular form. The communicability of disease from animals to man might, he said, be considered under three aspects—first, as to specific diseases; second, as to deleterious effects of a general nature; and, third, as to parasitic affections.

Under the first head we get no very definite information, but only vague assurances that each species has its own kinds of disease, which cannot be transplanted, or at least not permanently, to another species. The only animal disease which has yet been observed to be distinctly reproduced in the human subject is *anthrax*, or malignant pustule. We mean reproduced by infection, for the negative does not extend to inoculation. It is notorious that cow-pox, for example, can be and is transplanted to man by the latter process. Bovine typhus and pleuro-pneumonia and rinderpest have fortunately no sympathy whatever with the human frame. They cannot be reproduced in it even by inoculation. Some Yorkshire bumpkin recently took it into his head that he had been seized with rinderpest, and would not be dissuaded until his friends pointed out to him that if his apprehensions were true he would have to be dealt with according to the act, and the pole-axe applied to him. It is kind of Dr. Thudicum and his brother savans, at an alarming pathological crisis like this, to come forward and assure us that the infectiousness of specific diseases is limited to our own species. To the very worst there is a worser. Even when the rinderpest was raging among his herds, the English squire might congratulate himself on the comparative mildness of his misfortune. It was only his butcher-meat he lost, after all; whereas, had the liability to infection not been limited as it was, he might have lost everything, his own life included.

The second class of dangers to which we are exposed in our intercourse with the lower animals arises from the poisonous effects of unhealthy meat. Though eating diseased meat may not produce in us the original form of disease, it may greatly disturb our physiological equanimity—cause more or less violent indigestion, in fact. There have been instances of pleuro-pneumonia beef or measly pork, though not offensively bad, causing severe illness, from vomiting to cramps and collapse which have even proved fatal. Putridity would impart the same influence to healthy meat; and there is a kind of incipient putridity, to which veal and pork are specially liable, which may exist without giving very strong indications of its presence. Thorough cooking is the only safe remedy against it. Thus the "turned" game of the English nobility, the rancid butter of the Laplander, and the nature-pickled meat of the Japanese are all alike repudiated by the sanitary reformer. He admits that the processes of slaughtering and cooking may have a corrective effect even on diseased meat; but if the stomach rebels, that is an argument in itself stronger than any amount of scientific theory.

The third and most dangerous means of infection from animals is parasitic diseases. Parasites are very peculiar institutions, whether social or physiological. Perhaps their greatest peculiarity is the deliberation with which they develope themselves, and the multitude of stages they pass through, for such small, insignificant customers. Parasites in real life not only divide their growth into stages, but often select a distinct *locale* for each stage: they transfer their patronage to a new subject at every new phase they assume. Some ascend from the lower animals to a man, and some descend from a man to the lower animals. The tapeworms, which travelling quacks wage war against, we derive from measly pork: in the live pig they exist as bladder-worms, and it is only in human flesh that they can attain the full dignity of their existence. A more vicious and prolific parasite is the bladder-worm interchanged between us and calves. It appears first in the man, producing from 300,000 to 400,000 eggs a day. Some of these get transferred by one of nature's innumerable media to a calf. The calf does not appreciate them most likely, turns sick, and is killed. Homo believes in veal as a special delicacy—eats it as white and sickly as he can get it, and so the bladder-worm may return to his old quarters to complete his cycle of existence. Often he attains the length of ten or twelve feet, and it is almost impossible to expel him. From oxen and sheep, we derive a parasite of a still more painful kind, which settles on the liver. Another, which is generally interchanged between sheep, or oxen, and dogs, but may also be developed in man, settles always on the brain. In sheep it causes the disease well known as sturdy. Fluke in sheep is simply a liver parasite, supposed to be derived originally from mollucs or fish. Every part of the body has its peculiar tenants. Next to the brain the most dangerous part that can be affected is the muscular tissue. It is there the dreadful parasite trichina does its deadly work, being deposited in the shape of capsules so hard that they blunt the knives of the dissectors.

We presume it will not be necessary to go further into details. Our readers ought by this timo to be horrified if they are not enlightened. If they happen to have sufficient presence of mind left, some of them may ask, what is the use of frightening us in this way about tapeworms, and fluke and trichina? Simply friend, that you may be warned of the consequences of eating unhealthy meat. Until there is a sanitary police trained to prevent its sale, you will not even, with the utmost caution and the most respectable of butchers, be able to steer clear of it alway. One remedy, however, you have in your own hands—good cooking. Veal and pork especially should be well done. Beef and mutton are not so dangerous; but it has been shown that they also harbour specimens of animated nature more interesting than agreeable.—*South Australian Register.*

THE LAMB DISEASE AND THE CATTLE PLAGUE.

At a meeting of the council of the Royal Cornwall Agricultural Association, at Truro, Dr. Edwards Crisp, of London, having offered to deliver a lecture on the disease in lambs and the cattle-plague, a meeting was held in the Council Chamber.

Dr. **Crisp** commenced by observing that a great deal of mystery and obscurity prevailed, as no doubt they were aware, about the disease in lambs, especially the disease where parasites existed in the lungs. It must not be supposed that all lambs died from that cause, although there was no doubt that tens of thousands did die from it in this country; and it was especially important to remember it in speaking of the disease in lambs—that if a lamb happened to have these parasites in its lungs, then any depressing disease with which it might be attacked would be sufficient to cause a fatal result. The additional irritation, depression, and wasting which the parasites in the bronchial tubes caused to it, would be more than t could bear up against. They might have known the case of a man who, while brushing his teeth, had got a piece of ne of the bristles from the brush into the windpipe, and the rritation caused by it had at times been such, that the assistance of a surgeon had been known to be required to remove t. The irritation caused by parasites in the lungs of lambs as much of the same character. He pointed, in illustration f his subject, to coloured drawings of the windpipes and rincipal bronchial tubes of an ox, a sheep, and a lamb, ex- laining that he had not attempted to introduce the smaller ronchial tubes, there being two hundred or three hundred of em in connection with the lungs, and said that persons fre- uently committed a great mistake in assuming, when they und no parasites on opening only the larger tubes of a eep or lamb, that there were none in the lungs. He had own this to be the case that morning, as, on opening the rge bronchial tubes of a lamb, the lungs of which had been nt him, very few parasites were found; while in the smaller bes, portions of which he had opened, he discovered a very ge quantity; in fact, the smaller tubes were almost choked by them. And here he would just mention that the parasites re the same as those found in the calf. In the lamb to ich he had referred, he found a great many in the lungs; d knowing, as they did, that one great function performed the lungs was oxidation of the blood, they could well un- rstand that when the lungs were filled with these *entozoa*, lamb must readily succumb. He referred to drawings of *four* or five species of entozoa magnified, found in sheep, nmencing with the lowest grade, the cystica—Acephalocysts, bladder-worms, which were very common, he said, in sheep, en, and pigs, and were, in reality, larva or baby tapewoms; strongyli—Strongylus filaria, the Nematoideum ovis Ruphi, the Strongylus paradoxus, and the fluke, Distoma aticum, pointing out their distinctive forms and ap- rances. The last named of these, and other forms of ozoa, he explained, passed the early part of their existence he bodies of water snails, or the larva of some insect, and e afterwards perfected in those that happened to swallow m. These flukes, it was supposed, were taken into the nachs of sheep while grazing on wet and marshy land, and y farmer knew they caused a great deal of suffering and ruction to animals. Some of the entozoa possessed the erative organs in one and the same individual, and this was case with tape worms. In others the male and female ns were joined in the same individual; but in the strongyli males and females were separate and distinct, the latter g rather larger than the former. He contended that the ory and cause of this disease in sheep had been satisfactorily e out. The strongyli produced their young by eggs, the ng being not unfrequently extruded from the eggs when ing the body of the mother, and as they were exuded dly from the egg, it could be easily understood that when they got into a few sheep, the field in which they grazed ld soon be thickly sown with these eggs. If healthy lambs turned into that field they would be sure to take some of eggs and young worms into their system in the herbage, and thus become diseased. A very foolish thing was often done by farmers in turning their lambs into a field of clover which had been eaten down close by sheep, because if any of these sheep had been suffering from worms nature tried to get rid of the irritation, as in the case of poison, by evacuations, and large quantities of old and young worms, with their eggs, passed off in the mucus from the nostrils and in the excrement. In this way the ground, especially in the case of overstocked fields, became thickly sown with them; and if lambs were placed in such fields they were almost certain to obtain the eggs or embryo worms in the herbage. Since he had been in this part of the country his friend Mr. Tucker, who took great interest in this disease, had furnished him with some practical and important facts, to which he would refer, as he was sure they would prove instructive. He had always maintained that the history and cause of this disease were tolerably well made out. They could understand that if a lamb had these worms in its bronchial tubes, worms which contained something like a thousand eggs — and if they were to put them under a microscope they would see that those eggs would burst and the worms come out, and if taken into the lungs would in a short space of time do a great deal of mischief—they could understand that if a field was thickly sown with those eggs, the sheep turned into that field—the lambs especially—must, in the herbage, get some of them. A very common thing was that farmers foolishly turned their lambs into pastures of second growth, on which sheep had been previously fed, and although these worms did not materially injure the old sheep, yet he believed that large numbers of old sheep had them, and that they passed to the earth through their excrement, and the sheep got rid of them in that way; for it was a curious fact that these worms did not remain long in the body, and he believed that all the lambs that recovered got rid of the greater part of them. It was most important in this disease to keep up the strength of the animals—to feed them well, and so to support them that they might weather the storm. As he had said, Mr. Tucker had furnished him with some important facts, one of which was that a gentleman of the name of Rundle, who occupied Catchfrench Farm, had a quantity of sheep which were perfectly healthy and free from the disease. He bought 20 lambs at Camelford market, however, and after these reached his farm 14 of the 20 died, with every symptom of parasitic disease. The other six were in a dangerous state, but they struggled through. He now came to a most important fact connected with this case, which bore especially upon the matter which had brought them together that day, and which he desired to impress upon the minds of agriculturists generally. This disease had not appeared upon Mr. Rundle's farm before the arrival of these lambs; but this year his lambs were affected with the disease, having been put into the field which had been occupied by those that had died, and he had lost 20 out of 40 of them. He then sent the others to a farm near Dosmary Pool, in a different district, and they were all, he believed, doing well. This showed that it was always well to remove the sheep or lambs to another locality as soon as it was found that they were affected with the disease. That morning he and Mr. Tucker had called upon Mr. Hamley, of Badwa, who had until lately 70 lambs in a good state of health. He had lost 10 out of the 70. There could be no doubt from the account given of the disease as to what the 10 died of. Mr. Hamley allowed one of the 60 lambs to be killed for his examination. At first, on cutting into the lungs, no parasites were seen, and many persons under such circumstances would have said, "Oh, we have made a mistake—there is no parasitic disease here." Such persons, however, would have been altogether wrong, for he found that the smaller bronchial tubes were full of the *strongyli*; in fact, there were thousands of them, so that the greater part of the lungs was filled up, and therefore rendered useless for the purpose of oxidating the blood. But, in addition to the *strongyli* in the lungs, he found also in the *cæcum* the *tricocephalus affinis* (the hair-headed worm) in great abundance, and not only that, but the digestive stomach was likewise covered with worms; so that there were three causes to account for the illness of the animal. The worms found in the lungs only might, perhaps, occasion death; but, at any rate, the worms all tended to weaken it and to impoverish the blood, and it was almost impossible to effect a cure. He now came to the question of treatment. What was a veterinary surgeon to do? Was he to touch the worms in the lungs, and if so, how was he to get at them? They had heard, no doubt, of lambs being placed in a room or building, and made to inhale chlorine gas; but great care was required to be exercised in trying this remedy, and he scarcely thought that farmers generally would take the trouble to apply it properly. If they could get a proper building or room that would allow of the admission of the requisite amount of air and no more, diseased lambs would, he believed, derive great benefit from inhaling the chlorine gas. As he had said, this remedy required great care. A gentleman in Devon, whom he should visit next day, had informed him that a veterinary surgeon had nearly killed a lot of 24 of his lambs by putting them into a small cheese-house, packed tight, and making them inhale chlorine gas. It actually killed 16 of them instantly, and one of his labourers was nearly poisoned in getting the other lambs out, and was under medical treatment for a week after. The treatment, however, effectually cured those lambs that could be got out directly. Another mode tried was that of placing sulphur on a large piece of iron and lighting it in a chamber, so as to keep the chamber well filled with sulphurous gas, which the lambs inhaled, and by that means he believed a great many worms were got rid of. But there was yet another and very important medicine, and that was turpentine, for the removal of these worms from the stomach and intestines. If they gave a tablespoonful of turpentine and linseed-oil to a lamb about twice a-week—perhaps a dessertspoonful of turpentine would be best to begin with—the worms would be killed; and he had not the slightest doubt that the action of turpentine was positive and certain, for turpentine and oil would not only remove worms from the stomach, but also a great many from the *cæcum*. Referring again to the importance of removing lambs when attacked with the disease, he said that Mr. Tucker had informed him that the steward of the Earl of St. Germans had told him he had lost many lambs by the disease, but since he had removed them to fresh pastures he had not lost one. It was not every person who possessed a wide range of land to enable him to do this; but where it could be done, he was sure such removal would be always attended with great benefit, and he attached more importance to change of locality than to any medicine that could be administered. The effect of medicine, he admitted, might in some cases be doubtful, but he did think that good food and a change of locality would generally have a very beneficial influence, because he believed that a good deal of lamb disease had been occasioned by that forcing and over-stocking system, which was far more prevalent now than it was twenty years ago.

After referring to the disease in fowls and pheasants by t parasites, he proceeded to offer a few words on the ca plague, about which they perhaps knew less than they about the lamb disease. There was a notion in the mind some people that sheep could not take the cattle-plague; b more erroneous idea never existed, for he himself had se vast number of sheep that had died of that disease. Thous had died from it, and he knew of an instance in which Harvey, of Norwich, did not save more than 600 out of lambs, the remainder having died of the cattle-plague. there was this difference between the disease in the ox and disease in the sheep, that in the former the paunch was ge ally filled with dry food, as also was the third stomach, w was often round and hard; but this he had never see sheep, and that was why he believed the disease was so destructive to sheep as it was to oxen. Now the great e with the Government had been that they did not report sheep-plague, for it was not only very recently that this been done, and the week before the last it was reported 90 cows and oxen had died of the plague, against 206 she being more than double the number, and yet two or three ge tlemen in the House of Commons not long since asserted sheep could not be affected by the disease, and no person there to contradict them; but that the disease was as posi and unmistakable in sheep as in oxen there was now not slightest doubt. Dr. Crisp then referred to the steps wh the Government had taken to suppress the cattle-plague s it had made its appearance in this country, stating that had always from the first held that the only mode of effect getting rid of the disease was by stamping it out. They been labouring under disadvantages, which he hoped would corrected hereafter. What they wanted was a central head agriculture, for at present they had no scientific body of description, and he believed that had the Government tak his advice at the outset, they would have saved the coun millions of pounds. He also believed that one great evil un which they laboured was that the agricultural body had head. What they wanted was a board of agriculture an Veterinary College that could stand on its own merits, wi scientific men to support it, and to give it repute.

Mr. **Olver** offered a few observations, in which he detail the results of his experience on the subject of the lamb dise In the course of his remarks he stated that his own opi was that after sheep had grazed for some time on certain la especially cold wet pasture, it became exhausted of cert medicinal herbs which lambs require, and doubtless the abse of these left them more open to the attack of the disease.

On the motion of the Hon. and Rev. J. Townsend Boscaw seconded by Mr. E. Beauchamp Tucker, a vote of thanks passed by acclamation to Dr. Crisp for his able lecture, and meeting separated.

THE BREEDING AND REARING OF PIGS.

At the Ballymahon Farmer's Club, Mr. Archibald Higgins read the following paper:—The subject proposed for me, not by me, is the "Breeding and Feeding of Pigs." I do not intend to go into any general outline of the history of the pig: I believe this would be neither practicable nor profitable. This is done by those whose time and abilities qualify them for the work, as Martin, Richardson, Youatt, and others, whose history is both useful and interesting. My object will be to narrow this sphere, and merely notice some of those breeds with which I am principally acquainted, and select from them those I find best calculated to pay afterwards for their care and feeding. The origin of our present stock, both in England and Ireland—and I believe a few are still to be found in the Galway and western districts—was a description of swine commonly called the greyhound pig—tall, long-legged, bony, heavy-eared, coarse, bristled animals. These, I say, in their natural shapes, are almost extinct. In the years of 1846 and 1847, when the potato crop failed, numbers of these poor animals, of all colours and all sizes, looked like hard times, as did many of their owners. Many of this description of animals were got rid of; and, although through rather [illegible] cumstances, it was not without some benefi [illegible] this period little in the pig way was done [illegible] when people were obliged to acknowledge [illegible] only be made live, but be made fat, on [illegible] many other things to be hereafter describ [illegible] to acknowledge, because I well know [illegible] be conformed to this well-proved fact. [illegible] and for which we have good reason to [illegible] these better days a vast improvement in [illegible] mals. I do not mean to say we had [illegible] particular crisis of the pig history—[illegible] that the same amount of careful bree [illegible] practised that was since, and, consequ [illegible] beneficial results. A small farmer [illegible] nearly two full years with the pure [illegible] sold him for five or six pounds. This [illegible] it has given place to locomotion. [illegible] find, by very little reflection, that [illegible] very closely allied. We plough [illegible] thrash the grain by steam; we grind the corn by steam; we prepare his food by steam, and off he goes by steam. What I wish to convey is, we require a breed of pigs that, with proper care, will be fit for this speedy despatch. To our English friends much credit is due for their exertions and care in bringing the numerous breeds to the present state of perfection. There are at present numerous breeds, differing in some slight degree of shape, of quality, of colour, and of size. Many of these breeds are called after the various shires in England, as the Berkshire, the Suffolk, the Cheshire, the Hampshire, the Yorkshire, and many other shires. There are also many breeds named after those gentlemen and farmers who, with great painstaking and care, and then baptizing and re-christening are at no loss for names. They have, no doubt, brought the pig to a high standing amongst our domestic animals. Some will say, no doubt, whence come all these breeds, when we presume there went but two in the ark? that is, if they were then called unclean; but if clean, there went in seven. We know they were called unclean by Moses and by Israel. We are also informed they were so called by other eastern inhabitants. There is, however, some good reason assigned for this—namely, that the swine of these countries were of a most unpalatable description—a mass of soft, lardy substance, with ill flavour, and might fairly have been called disgusting, and it is believed by many of high standing that had it been the article with them, as it is now found with us, it would be held in high estimation. But to return to our breeding. I said there were numerous breeds differing in colour and in size; some coarse and some fine in different countries, according to their several climates. These taken, and by careful crossing and judicious interchanges, have brought most of our breeds to their present perfection. The first step to this improvement was effected between the old coarse, bony, flat-sided pig and the Chinese breed, or, better still, the black Neapolitan; and from these three, they being nearly a perfect contrast as to shape and size, this great renovation of this most valuable stock was effected. There are some good breeders in Ireland; but these are chiefly confined to those who intend them for the show-yard; but in the midland counties little or no trouble is taken as to what kind of points a good sow should have, or what are the deficiencies a boar may possess. I have seen miserable animals kept for this purpose, and thereby incurring both loss and disappointment to the breeder and feeder. Our present breeds may be designated by four different classes. The first is the small porker; they are a round, short pig, with cocked ears, thick neck, round barrelled, short-legged, fine both in bone and bristle, the latter approaching to hair, carrying weight to the ground, and answers dairy-feeders and others living near large towns or cities, where quick marketing is the object. The second class is what we call the medium size: these pigs, when properly bred, are what generally suit the farmer; they are a hardy, thriving pig, possessing a uniformity in points, keep up a fair condition while growing, and, if properly cared, will be ripe and fat at from 12 to 15 months, varying in price from £7 to £8. The third class is still a size larger; a little heavy in the ears, deeper in body, approaching to fatness, not so well proportioned, looking too narrow for their height; they are heavy feeders, almost impossible to keep in condition while growing, they have such bone and muscle to develope, which lasts for 16 or 17 months, and coming up to two years it may be fairly called excellent, heavy bacon; these pigs could not pay the farmer, although they may go from £10 to £12 each. The fourth class is the one I first hinted at—the old, coarse, I would say both English and Irish, pig—the original parent of our present stock, and approaching in similitude to its wild ancestors. In the selection of either boar or sow for breeding, much more attention and consideration are necessary than people appear generally to imagine. With very little judgment and management, and much less expense than is generally incurred, it is as easy to procure a good breed as an inferior; and as the former is infinitely more lucrative and remunerative in proportion to the outlay than the latter can ever be, a little attention to the subject may be advantageous. In choosing the parents of future stock, in every case, whether the object be pork or bacon, the points to be looked for are—in the sow a small, lively head, a broad and deep chest, round ribs, a haunch falling almost to the hough, deep and broad loin, ample hips, and considerable length of body in proportion to its height, nor must the broad, flat, table-like back, the broad, thick shoulders and hams, be forgotten. One qualification should ever be kept in view, and, perhaps, should be the first point to which attention should be directed—smallness of bone in proportion to the flesh and fineness of the best parts, with lightness of offal. The boar may be less in size than the sow, shorter, and more compact in form, with a raised and brawny neck, lively eye, a small head, firm, hard flesh, and if of the large breed, his neck well furnished with bristles; in other respects look for the same points I have described in reference to the sow. The period of the sow's gestation is generally about sixteen weeks, and sometimes a day, but seldom more: she should not be fed too high the first eight weeks, but gradually minded afterwards, and a little bran given during the last week, and should not be allowed to lie in the same sty with stores or other pigs, or allowed to thieve, or go through fences; it sometimes causes loss and disappointment. Care should be taken that she has two good rings well put in before letting to the boar, as ringing afterwards will not do. The proper seasons for young pigs are spring and harvest; this is easily managed, as a sow that has two litters in the year meets the right market for selling sucks, and answers the right season for keeping stores. There is no domestic animal, perhaps, suffers as little from parturition as the sow, and is delivered with comparative ease: she should have her own way, and be allowed to indulge her own inclinations. A difference of opinion exists with breeders as to the propriety of taking the offspring away as they are farrowed with a young sow. This mode of treatment is sometimes attended with disadvantage and loss: one pig should not be taken from a young sow until she has another—that is to say, leaving one still with her during her sickness; it will go round her nose and squeak, and they become united, the sickness being the proper time for this union. We have seen pigs taken away and afterbirths cleared off; the young then offered, the sows became most ferocious, and would even tear their own offspring; but we never knew of a single failure where they were treated as described. We believe this worthy of some notice. There is no animal, perhaps, in existence can be fed with as great a variety of food as the hog. He will do well on mill and brewery wastes, on distillery and starch mill wastes, kitchen, dairy, and slaughter-house refuse, and almost all kinds of roots; potatoes, turnips, mangels, parsnips, and carrots; crushed corn of all kinds, as crushed wheat, oats, beans, bere, barley, peas, rape, rye, vetches, and numerous vegetables—cabbage, lettuce, pea haulm, tares, clover, sainfoin, lucerne; and even many kinds of fruit—apples, nuts, haws, and such like. Weeds also are resorted to, as thistles, dockens, chickweed, coltsfoot, and others too numerous to mention. Our object now will be to use these ingredients to the best advantage. Much might be said on this point, but we must shorten it for the sake of convenience. The sow particularly requires most care, and should be fed with the most nutritious food at least four times a day; her food should be potatoes, mangels, swede turnips, and white cabbage, well boiled and well pounded; to this should be added gruel, composed of Indian and oatmeal, or any of the other grains mentioned; salt, and soaked bran, flaxseed bolls ground, milk well mixed, and given in a liquid state. The variety has a decided advantage; mind the sow, that's what makes the pigs. The young need not be fed until three weeks old; they should get skim milk for a few days, then give potatoes with the gruel as described for the sow, crushed oats steeped and fermented; this should be strained, and a little pollard added, which greatly improves young pigs' mess. One rule is indispensable, not only with the pig, but with other animals, to mind the laxative portions of the food given, and add or diminish as the case may require. It is time to wean and sell, or turn out for stores, at eight weeks old. The stores when turned out should not be neglected, but condition kept up as well as it possibly can: neglect on this point will cause both disadvantage and loss. It does not require much attention to discern it is much easier to keep up condition than after it has gone down to bring it up; besides, the animal is never the same. This is the pig for all the refuse, for all the shifts, and for all the garbage before mentioned, and should be plentifully given with every advantage. Two rules must not be forgotten with stores—that they have always clean water at command, and a place to shelter from the weather. The last to mention is the fattening. In order to do this you will require dry floors, fresh air, and cleanliness. Foul air encourages disease; cold air consumes food in making heat, that ought to make fat. It would not be practicable to put in a growing store to take fat, nor would it be judicious to put in a coarse dwarf to make a good bacon hog. You must have a full-grown, fair-conditioned animal, possessing at least some of the principal points to which we have already alluded, and with this, and proper attention, it is not easy to conceive the rapidity with which a pig will fatten. There should not be more than six kept in one stye. The farmer has five principal ingredients for this purpose, viz., grain, potatoes, swedes, mangels, and cabbage. The roots well boiled and well bruised, the grain also well boiled: take equal parts of Indian and oatmeal, and any of the grains mentioned you may have, as crushed beans, peas, vetches, rye, or barley, with a little pollard and salt, made in thick gruel, added to the roots, and left to ferment and sour, and always given in a lukewarm state at regular hours, three times a day. The less excitement or annoyance the better, and a desire for sloth and sleep encouraged, by watching his comforts, and the words made applicable that are sometimes used with some easy-going and quiet dispositions:

> "To eat and drink and sleep; what then?
> To eat and drink and sleep again."

We say it is the small farmer's duty of the 40 Irish-acre class to which I belong, and may also apply to a still smaller class, to supply his family with every want and requirement for feeding, and encourage two rules—neither spare, nor waste: the former is unprofitable; the latter, dangerous. My present stock is thirty, all black; two medium sows, half-bred, nursing ten each, from a bred black Berkshire boar; a sow of the larger breed, at the drop; and seven stores. I consume all my roots; I crush all my grain. My object is to have as much green as grain crops. My tillage this season is less than usual, and consists of five acres and a-half of green, and five acres of grain crops, all drilled; first potatoes, then cabbage, mangels, and swede turnips. I always keep my stall-fed and pig-manure for the cabbage and mangels, with salt. I mention this for the sake of the small and struggling class, to whom my undivided regard and sincere sympathy are directed; and would now beg to thank our honourable chairman and gentlemen, whose patience and forbearance are so heavily trespassed on.

POULTRY AND EGGS.

A subject to which we have frequently drawn attention—viz., the increased raising of poultry—is beginning to attract notice in other quarters, and we believe it to be one which may be very profitably ventilated and discussed, with individual and national advantage. In the new part of *The Journal of the Royal Agricultural Society* we find a paper by Mr. J. A. Clarke, "On increasing our Home Production of Poultry;" whilst in the Society's premium list there is an offer of £10 for the best essay to point out how far the rearing and management of poultry on an ordinary farm are capable of improvement and profitable extension.

We have not much faith in the results of joint stock companies, for the carrying out of what can usually be more satisfactorily supervised and conducted by private enterprise and capital, and we therefore fear poultry-breeding companies, like fisheries and other associations, will break down from having too many managers, and too much money to play with. The expenses of poultry-breeding, even on a large scale, are not beyond the reach of individual capital and energy, and are much more likely to be carefully managed than by boards of directors. Be this as it may, we shall only be too glad to see poultry-breeding extended, with profit and advantage to all concerned, and our food supplies increased in this direction, as there is little prospect of our being surfeited with fowls as they are on the south coast of Africa and the West Indies, where one gets to loath the sight of this white meat, however disguised by the art of the cook.

Of eggs alone our continental supplies are becoming enormous. A quarter of a century ago we were content with taking 70 or 80 million eggs annually from France and Belgium; but this number has been increased fivefold. Last year we took nearly a million of foreign eggs a day, but this year we have already imported in the first eight months nearly as many as we received in the whole of last year; and if we but take for the remainder of the year a million a day, as in 1865, we shall have received 447 million eggs—a pretty tidy number, to say nothing of our Irish and home supplies. Now, here is a round sum of nearly a million and a quarter sterling paid for the single item of eggs from abroad, as it is quite clear Ireland and Scotland might do something more in this direction; to say nothing of England and Wales. We may well echo the enquiry, "Cannot we compete with foreigners under the disadvantage of having to convey their fragile and perishable commodities over long journeys and voyages, with the expense of commission agents at the distant market, and a duty of a penny a dozen levied upon their eggs?"

M. Lavergne very recently stated the value of French eggs and poultry produced annually at ten millions sterling. Another credible authority tells us that six million head of fat poultry, worth about £750,000, are annually sold in three French country markets. The annual consumption of Paris is set down at four and a-half million head; while with our much larger metropolitan population we do not receive more than about three and a-half million, whilst it is believed that the quantity annually killed in the kingdom is about nine or ten million head. But, of course, these figures must necessarily be conjectural. Ten years ago Ireland had about twelve million head of poultry. There is a continuous demand for poultry, and attention should be given to increase and improve the supply.

Take another Catholic continental country. In 1857, there were sixty million head of poultry in Austria, valued at one and a-quarter million sterling, and the annual produce of eggs was stated at 2,400 million. Although this does not come up to one-fourth of the production of France, it makes a large item in returns. Not that we are disposed to give credit to the vague estimates of some writers who would have us believe that the value of the poultry bred in France is equal to thirty-eight million, or nearly one pound per head for the entire population.

Without following Mr. Clarke through all his details of artificial incubators and modes of rearing and feeding young poultry, or the statistics of profit and loss on rearing large numbers on a systematic plan, his article in the *Journal*, and the several pamphlets on poultry-breeding from which he quotes, may well be commended to the careful perusal of many a farmer and farmer's wife, who may derive advantage from the facts stated and hints thrown out.

There is one suggestion which he throws out, which we think well worthy of adoption, and that is the general sale of eggs and poultry by weight. We usually judge of the value of a goose or a turkey by weight, but fowls or ducks, or eggs, are sold only by appearance. A heavy and a half-fat fowl go at a price irrespective of the cost per pound, and a Spanish egg counts for no more in making up a dozen than a Hamburg egg of two-thirds the size.

THE CATTLE PLAGUE AND THE CHOLERA.

At the meeting of the Ross Agricultural Society,

Sir **Joseph Bailey** said he thought he might be allowed to congratulate them, as farmers of England, upon the fact that at the present time that disease had almost entirely disappeared—that during the last week only eleven cases were reported for the whole country. He might also further congratulate them, remembering that when the disease appeared in this country once before, about one hundred years ago, it took twelve years to eradicate, although at that time, from the non-existence of railways, contagious disease had not the chance of spreading as at present to so full an extent—he might, he said, congratulate them on the fact that it had now so soon been nearly exterminated. He might also congratulate them, as agriculturists, upon the fact that it was mainly by their own endeavours, by the energy and determination with which they had carried out the rules laid down by Government, that they had reached that happy conclusion of their troubles; and the happiest thing of all was that those rules and regulations, difficult as they were to submit to, and hard trials as they must have been to many men, were suggested and urged upon the Government by the farmers of England themselves. He recollected that towards the beginning of the session a very great authority upon these matters, a most eminent member of the Cattle-plague Commission, said he feared very much that the measures which were being adopted would not have a satisfactory conclusion, because, although we might prevent one animal from touching another, and so imparting the disease, there were other means of conveying it, viz., by the foot of a horse, the clothes of a man, or even by a fly. He said that if we took a glass of water carefully distilled and purified, and placed it in the open air for a few days, a quantity of minute vegetables would appear and settle on it as a light scum, and that those vegetables, if wafted over a farm-yard, might convey the seeds of the disease; that though we might avoid any ordinary mode of contagion, these remote causes were beyond human control, and that for the prevention of them we must trust entirely to Providence. It was therefore with great satisfaction, he saw that these causes had abated in the same proportion as the other and more apparent causes of the disease; and he would humbly suggest to them, as one knowing very little of agriculture speaking to those who knew a great deal about it, that slaughtering was at best an expensive mode of stopping any contagious disease whatever—that it might be possible to use similar means for the staying of the cattle-plague as we used for the staying of the cholera, viz., cleanliness in our farm-yards and homesteads. If a man by keeping his farm-buildings clean could prevent the cattle-plague, it was his duty to do so in the interest of himself, his friends, and the country at large.

Mr. **Biddulph** said: There was one thing in those meetings which he admired, and that was that they had all one common pursuit, were all interested in one object—that they had all one aim and one purpose, viz., the promotion of agriculture. By that they became bound in a kind of brotherhood, and the interest of farming—which he should always maintain to be the greatest interest in this country—received the common sympathy of all classes, from the highest to the lowest. He knew that at gatherings of that kind all allusions to political topics were forbidden. It would not, therefore, become him to dilate on the merits of that party to which he was proud to belong, nor to say anything against that party to which he was opposed; but he thought one observation he might safely make, viz., that no party, be it which it might, could ever keep the ascendancy in this country without looking for the assurance and support of the agricultural interest. He need hardly remind them how great that interest is, or that it is the opinion of some of our greatest political economists—men who have thought much on the subject—that the difference between a good and a bad harvest in this country is to be measured by something like the amount of from thirty to forty millions of pounds sterling.

Captain **Power** said it must, he was sure, have been a pleasure to them to hear the remarks of Sir Joseph Bailey with respect to the decrease in the cattle plague—that dire plague which had visited so many parts of England; and it should also be a great cause of thankfulness to them that that part of the county had been spared from the scourge. The district of Ross was considered more particularly as a sheep-breeding district, and it had a breed of sheep which he believed to be second to none in England of their particular class. Such being the case, the committee had thought little danger would be run, cattle being excluded, by bringing sheep together, and carrying on that competition which had now been continued for a good many seasons in the neighbourhood. He was sure they would hail with great satisfaction the time when they could open their show-yard once more to cattle, for although sheep were the staple of the district, he knew some good herds in the neighbourhood of Ross: one he could particularly mention which he had lately seen at Bickerton (Mr. J. Wigmore's), such an one as was not often seen, and which he might say was panting with the energy of competition. He was sure that when the show-yards were again open to the competition of cattle that herd would be heard of all over Herefordshire.

Colonel **Symonds** (the Chairman) said in his opinion that the action of societies such as that might be more beneficial in carrying out measures for its suppression than individual action could be, and also his belief that the disease, like cholera, is very much under our control. Thus, as Sir Jos. Bailey had remarked, if we attended to our homesteads we might do much. It seemed to be clear that the disease was brought to this country from abroad; and it was most important that great attention should be paid to the condition of cattle-ships, than which nothing could be more horrifying. Again, as to railway trucks and public markets, an efficient system of inspection should be organized. Our great Smithfield market, we had been told, was sadly deficient, having no water, and not sufficient room for the cattle, while the driving of the cattle was a disgrace to us. Looking at these things, and seeing the danger of relapsing, as far as railways are concerned, he thought agricultural societies might with some chance of success represent to companies the duty which was demanded of them in this respect.

Mr. **Arthur Webb** asked the meeting to consider whether it was not possible for many of the cottages in the neighbourhood to be greatly improved. He believed that if gentlemen would only go round among their labourers they would find many filthy dwellings calculated to produce cholera. There could be no question, he argued, of the advantages of cleanliness and comfort in the cottage in their effect upon the workman; for he had invariably found that he was the best workman who came from a comfortable home, rather than from one of squalid poverty and filth. Proceeding to condemn the condition of many of the cottages in the neighbourhood, Mr. Webb pointed out the impossibility of the ordinary decencies of life being observed in a place where a man and his wife, with perhaps a daughter and son grown up, besides other children and a lodger, had to occupy a couple of sleeping-rooms. The necessity for the improvement of the cottages of the neighbourhood was great, as tidy labourers were disgusted with them, and would not live in them; and he would suggest the practicability of the relieving-officer making an inspection, and reporting to the board of guardians. If some practical scheme of this kind were adopted, he thought that we might then hope to see great and beneficial results, and we should have done what we could to keep the plague from the people as well as from cattle. Before the meeting of next year he hoped to see a great improvement in the cottage dwellings of the neighbourhood.

Mr. **Duckham** said: There was one subject which had been touched upon by nearly every speaker, and to which he would also briefly refer; that was the dreadful visitation which had fallen upon the herds of this country, and which at one time threatened even to destroy the flocks. Much had been said and written upon that subject by different parties, who were putting forth their dicta as to whence the disease came. But in his (Mr. Duckham's) opinion there could be no question but that it came from abroad: and he thought also that unless the greatest precaution was exercised by our Government there was reason to fear that the result would be another visitation, for they read that it was spreading on the continent. They knew that under the stringent measures which had been adopted the disease had been materially reduced—all but banished from the land, there having been, as Sir Joseph Bailey had remarked, only eleven cases in the last week, and those spread over half-a-dozen counties—but he (Mr. D.) felt that it was just at this moment that care was wanted, and that they should, more than ever, be judicious in their measures with a view to prevent a further outbreak. He felt that the attention of the Privy Council should be prominently drawn to the subject in reference to the precautions and restrictions necessary to be observed for the future. He quite agreed in the opinion entertained by Mr. Kemp Bourne, a gentleman well known in the agricultural world, who had had some correspondence with the Earl of Lichfield and the Duke of Buckingham. The Earl of Lichfield had last week held a meeting in Staffordshire, and brought forward Mr. Kemp Bourne's scheme, which was that of holding district sales for cattle for a short time, instead of opening the fairs and markets. Agreeing with that view, as one of great importance, he thought it right to submit it to the notice of a great agricultural gathering such as he had the honour of addressing.

Mr. **Bradstock** said he wished to join in the expressions of regret which had been used by Mr. Webb—and which he believed were universal—that the miserable dwellings of the poor would not admit of their having beer and cider at their own homes instead of being dependent on their employers for their daily supply, and which induced many who were not employed upon farms, and who therefore had not the supply which others had, to frequent public-houses and become addicted to intemperate habits. We often heard of companies being formed for carrying on business of almost every description. Freehold land societies were formed for buying land and building houses for political purposes; and societies were instituted for various other purposes. His opinion was that if the gentry, the clergy, and other parties were really sincere in their desire to promote the comfort and the happiness of the labouring classes, to check drunkenness, and to lessen the evils arising from adults of one family—as had been stated by Mr. Webb—sleeping in the same apartment, some scheme might be originated for the purpose of buying land and building suitable dwellings for the poor, and thus making the occupation of wretched hovels less necessary than at present. He would venture to say that if in addition to such houses, it were practicable to put up conveniences for the cottagers of every parish to brew their own beer, instead of being dependent on their employers—and if the malt-tax were repealed—every cottager would be able to brew for himself a hogshead of beer at about sixpence per gallon quite equal to that for which he now paid sixpence a quart in public-houses. Mr. Bradstock, in further urging this question on the attention of the meeting, referred to a plan which Mr. Rolt, one of the members for Gloucestershire, is carrying out in his parish, where he is providing a small brewery for the use of the poor inhabitants of the village, and expressed his own opinion that there are many advantages to be derived from a scheme that will enable the labouring class to have beer at their own houses. Support to such a scheme would be much more beneficial and much more agreeable than making complaints of existing arrangements.

PRINCIPLES OF BREEDING.

TO THE SQUATTERS OF VICTORIA.

Gentlemen,—Having been for twenty years a professional sheep-breeder (classificator for Merino high breeding) in Prussia, I arrived here eight months ago from my native province, Silesia. Practically brought up in the most celebrated breeding establishments of Prussia, as well as in a renowned woollen manufactory, I beg to refer to the high testimonials given to me by the Director of Sheep-breeding, A. Koerte (author of the as yet unequalled work on Merino-breeeding, "The German Merino Sheep"; editor of the "Year Book for German Sheep-breeding;" Member of the Association of German Sheep-breeders, &c.), as also from the breeders' Society of Liegnitz, the originators of the grand exhibition of Merinoes at Leignitz, in Silesia, last year, which has gained a far-famed celebrity.

The rich collection of Victorian wools at the International Exhibition of London in 1862, first suggested to me the idea of devoting my efforts and abilities to this young and thriving wool-growing colony. My plan was soon matured, but its practical execution required time for the formation of necessary connections; it finally necessitated also a degree of familiarity with the wool products of this colony, and with its soil and climate, bearing materially upon productions; for thus qualified only, could I venture upon a course, which, while advantageous to myself, should aim at promoting the welfare of this colony.

After having passed through this necessary praparation, it is now my first step to express, in the following observations, my humble opinion on the question:—

"By what means can the best and most permanent results in sheep-breeding in this colony be secured?"

Before the breeder enters on his field of labour, he will first have to decide clearly, with what species of animal he intends to operate, and to what object he will direct his efforts.

In sespect to the species with which stock-breeding in this colony is chiefly to be occupied, the practice has already sufficiently and reasonably fixed the choice upon the sheep. The second question, then, at once arises, what object is to be aimed at by the breeder, who will not *eo ipso* follow the path of custom and precedent, but who will endeavour to convince himself of the correctness of such a course, so that, in accordance with his science, he may act consciously.

Sheep-breeding is divided at the outset into two collateral (I will not say directly opposite) main branches—the flesh-growing and the wool-growing systems. Each of these treats the chief aim of the other as a secondary object only, without, however, neglecting it more than local circumstances necessitate. There cannot be a moment's doubt which of these branches is the one solely adapted to the colony of Victoria. The population, though rapidly increasing, is yet very scattered; it is not sufficient for the consumption of the quantites of meat resulting from the flesh-growing system within the colony; and the want of a near market beyond its boundaries, combined with climatic conditions, which render the fattening of flocks periodically almost impossible, are sufficient reasons for considering the wool-growing method as alone suitable, and further, the geographical situation of the country completely justifies the efforts made to produce wool of superior quality (Merino-breeding).

In wool-growing two kindred, but in their extremes completely antagonistic, branches again manifest themselves—the production of combing and carding wool, between which there is a further choice.

Although on this point I do not as yet venture to give my opinion, so far as that is dependent on the most accurate acquaintance with all local conditions, yet perhaps I may be allowed to make the following remarks on the subject.

As it is proved by very interesting scientific investigations that in general an insular climate is favourable to a certain straightening and lengthening of the down-like fibre of our Merino sheep (structure of combing wool), so this result can only be accounted for as far as such a climate is characterized by a more humid atmosphere in a prevalent warmer temperature, whereas the drier continental climate favours the structure of carding wool, and the most perfect production of this kind of wool is always to be found within the boundaries of vine-growing climates. We will, however, consider this matter more closely.

Combing wool, in the spinning, is expected to give a smooth thread (similar to the linen thread), and must for this purpose, after being deprived of its curvatures, be placed in parallel layers, like flax (length of staple is therefore the chief requirement), and has to this end to undergo the process of combing; that is, it is drawn through fine metal combs. The wool must consequently also possess great solidity of the single hair, for every torn hair falls among the "noils," which have scarcely a quarter of the value of the "sliver." In carding wool, on the contrary, the object is to furnish a rough thread—*i. e.*, a thread on which appear as many hair ends as possible, which afterwards favour the act of felting, and form the surface of the cloth. The tearing of a hair in this process (carding) is no loss, and will even, with some longer sorts of carding wool, be done purposely. Firmness of the fibre is thus desirable for the durability of the manufactured article, but its absence does not make the wool absolutely useless for manufacture.

Now, the relative firmness of the wool-hair principally results on the equal nourishment of the same (consequently of the animal), and upon its being protected from atmospheric influences, affecting the substance of the hair, which are especially manifested in violent changes from dry to wet, warm to cold, &c.

Flock-owners of this country have from the beginning applied themselves to the growing of carding wool, and the extent of the produce proves what success has been obtained.

Is the wool production of the colony, then, or rather the value of the same, capable of being increased? This question must certainly be answered in the affirmative; and it would not be difficult to show that the value obtained, apart from any possible increase of the number of sheep, could be raised considerably. I will endeavour to demonstrate this briefly, without, however, taking into account any increase of the quantity of the produce.

During my stay here I have taken advantage of every opportunity to examine wools grown inland, and I readily and candidly confess. that not a small portion of these have reached a far higher degree of perfection than I expected to find. But observing, besides many very satisfactory samples (of great practical fineness, softness, and regular structure), so many and a far greater number of imperfect products—the great bulk proves that the success achieved leaves still very much to be wished. This is also shown by the prices obtained for these wools. There is too wide a difference between the highest and lowest range of the price. It is evident from this that the average price is capable of a considerable rise.

In the progressive improvement of the wool, then, I see the means of attaining permanently the highest results from sheep-breeding. This object, however, is not to be gained by the use of good rams alone. To improve the flocks, in the true sense, is to improve the wool for all purposes of manufacture (conjointly with increase of quantity and so to increase the value of the clip to the highest possible remuneration). This aim can only be attained with certainty, and in proportionately short period, by judicious selection, in keeping steadily in view the desired object of breeding. This requires a careful study of the natural laws of transmission; of the individual qualities connected with each other; a sure and accurate perception and valuation of their merits and defects—in short, the technical knowledge, such as only the professional breeder can by many years' study make his own. The truth of this fact is indisputably acknowledged in Germany, where Merino-breeding has reached a high standard, and the most superior and dearest wools are produced. In Prussia, for instance, *there are now few flocks*, the breeding and supervision of which is not entrusted to a "classificator," and the most celebrated flocks have for the greater part attained their extraordinary success by these breeders of technical knowledge. Of course, the breeder must not be mistaken for the wool-sorter. The latter has gathered his knowledge in the wool-shed only; it is his task to examine the wool according to all its properties, in its slightest distinctions, to sort it out of the bulk of the clip—his occupation refers to the ready product alone. It is otherwise with the breeder—not the ready product, but that which is to be produced from the material at his command, is the object of his labour. With the knowledge of wool he must combine the knowledge of physiology; he must be able to discover from what cause the wool shows any desirable or undesirable characteristic; he must know by what combination the kind of wool, which is most esteemed and highest paid for, can be produced; he must devote as much attention to the body of the animal (the basis from which the produce s raised), as to the produce itself—for only a well-corresponding and sound basis can afford a rich, sound, and valuable yield. He must, therefore, consider all local, and even personal conditions, in order to attain the best possible result.

Practical breeding must then be in itself breeding by selection for the superiority of those previously mentioned yielding qualities. Breeding with regard to "blood alone, without valuing the parents and offspring upon their yielding, is not practical; for "pure blood" has no practical value at all, unless combined with stability of the yielding qualities.

Transmission is the base of breeding. "*Both parents transmit their qualities equally into the offspring.*" This principle is the foundation of the whole science of breeding. (Of course, it can only become evident in its strongest force, when all circumstances are perfectly equal, what in reality hardly ever. I may say, never happens). Experience teaches us that a real amalgamation of the parental qualities can only be attained when the parents are of a certain homogeneity, whereas the result of heterogeneous copulations are faults of the wool, and (in the extreme of heterogeneousness) even disproportions of the body (the qualities having been laid only, as it were, side by side)—"*Like produces like.*"*

Thus, the purpose of classification is to group the flocks into as many classes as they possess prominent distinctions of form. In this I follow the system first used by Koerte, which, in my opinion, answers all requirements, as by its use any heterogeneousness in the individual classes can be eradicated, and as it can be modified easily according to the ideal variously formed for the different purposes of breeding. On this system five classes are sufficient, even for a flock consisting of very heterogeneous animals. The object of this plan is to bring up the whole flock to a normal standard—proportionate to the ideal formed for the breeding aim aspired to—in which "nobility" and quantity of wool, and good structure of the body are considered in an equal measure, and at this normal point to effect an equalization through the flock. The middle-class contains the normal animals (élite); above this class (by poorness and over-refinement of the fleece and body) there are two classes, which we term jointly as I. and II., "over-bred" classes; below the normal class, (on account of coarseness of the wool and base shape); there are other two classes, IV. and V., both termed "under-bred" classes. The features of this system of classification may be shown by the following illustration:

"Overbred."	Over-	I.	refinement.
	Beginning to	II.	over-refine.
	Normal class.	III.	(Elite.)
"Underbred."	Beginning to	IV.	to deteriorate.
	Deterioration	V.	of wool and body.

In some cases the formation of an élite class at the outset will have perhaps to be abstained from. As soon as it is in existence we must endeavour to consolidate it and fix the type. At this stage the point is reached where in-breeding must take place. We form the stud out of the choicest specimens, and we affix the numbers of the ewes of the stud to all their offspring (formation of families). The keeping of a breeding register and valuation-book becomes necessary, &c.

It only remains for me now to mention the material means for the further improvement of sheep-breeding. This relates to the purchase of good and suitable breeding material, as the same becomes necessary for those flocks which are too far below the breeding aim aspired to, for to introduce to them, or to hasten the development of those desirable qualities which are wholly wanting, or only slightly present among them, and to eradicate existing defects. For this purpose rams have for some time been imported—among other countries, from Germany; and, indeed, no country in the world possesses more valuable improving material—an assertion which has been repeatedly confirmed at the industrial exhibitions held in Europe within the last twenty years, by the verdict of qualified and impartial judges on the "nature, character, and manufacturing value" of the German-Merino wool. But I would caution against proceeding regardlessly in this respect; for the result of cross-breeding will always completely depend on the selection of the improving animals, for which reason this selection must be made with the most accurate knowledge of their necessary qualities, and with especial regard to the permanency (stability) of these qualities. A ram excellently adapted for a certain purpose of crossing has a value that is scarcely to be calculated. Really good and suitable improving animals should therefore be imported. What is good and suitable is, of course, to be decided by a special knowledge of the individual flocks; but, generally speaking, I may say that the ram adapted for the requirement of this country ought to be of a strong, broad, and round frame, richly and well covered from the head to the legs with a densely-closed fleece; his wool of proper fineness, especially of uniformity and trueness of the fibre, with a length answering the object, strong, nervous, elastic, brilliant, soft, but still manifesting a masculine character: the whole animal should distinctly evince a noble type. Such rams could be furnished above all other German flocks from the pure-blooded and well-bred Negretti flocks of Prussia, as has been proved by the great Leignitz show in both branches of wool-growing. The combing-wool flocks of Prussia have about 40 years since been brought to a very high state of perfection. They furnish the most valuable contingent for the unsurpassably fine manufactures of England in her soft-worsted stuffs. I am surprised that those beautiful animals have remained almost unknown here, while the breeds of Mecklenburg and Wurtemburg, which are inferior both as regards excellence of fleece and body, and finally the Saxon race, whose delicacy and over-refinement have been dreaded in Germany for more than twenty years, have been imported.

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* Modern wool manufacture does not, as in former times, demand extreme fineness only, but looks rather to an union of all desirable qualities, viz., fineness and trueness of the fibre, strength, firmness, elasticity, softness, and lustre—the collective presence of which we term the "nobility" of wool,

If the importation of breeding animals is to become of really great and lasting benefit, it must be transferred from mere speculators (who purchase in Germany at the cheapest rates, and through incompetent agents) to upright and qualified men, who take a pride in the improvement of sheep-breeding.

I have the honour to be, gentlemen, your obedient servant,

OSCAR E. KADE, in *Melbourne Economist*.

SMEARING AND DIPPING OF SHEEP.

At the Badenoch and Rothiemurchus Agricultural Society, Mr. **MACDONALD**, sen., Strathmashie, who introduced the discussion as to the smearing and dipping of sheep, said: I have now been twelve years in Badenoch, and am an extensive sheep farmer. Young people generally think that they are wiser in their day and generation than older heads, and, acting up to this, my son induced me to leave part of my ewes unsmeared, and dip them instead. I followed his advice, and was the loser. He would not, however, give in, and he again made me try the wedders with the same dipping composition. I found the second trial not to be beneficial to the stock. My son still continued to urge the dipping on me, and would not rest satisfied until I would dip my hoggs; and, they being in the low country wintering, I went purposely there to superintend the operation, and see that the thing was properly done. This cost me more money than the smearing process. To make myself sure, I kept a separate account as to the price of the dipping and smearing, and also the weight of the wool, and found myself at the end of three years to be £80 a-year short of the money I would have had by using tar and butter. Now, an old practical man arrived at the conclusion that he would not leave a single sheep unsmeared (and I have a good many of them), although he would put off his coat to do so.

Mr. **PELHAM**, Ettrige, said: When I first came to this country, between two and three years ago, I was told that the more modern practice of dipping would not pay; but, being an Englishman, I was prejudiced—and what Scotsman is not? I, however, stuck to my own opinion, that dipping is the best mode, and I find it pay. I maintain that dipping is cheaper by sixpence a-head, including every minor expense, and my sheep stood the winter equally as well. I also found that during the time of lambing the ewes were in a cleaner condition, and the lambs more numerous. The deaths, moreover, during the winter were far less than when they were smeared.

Mr. **MACDONALD**, jun., Strathmashie, said: We sold our hogg wool (white), the hoggs being fed in Lord Fife's parks, at 23s., whereas we sold the laid Highland wool at 17s. to 18s. I consider nine pints of tar for a half-stone of butteryne, and a half-stone of best butter for the tub, is the best and cheapest composition a black-faced sheep farmer can use, and that smearing sheep will stand the rigours of our high latitude better than they would by any dipping yet found out.

Mr. **MACPHERSON**, Drumore: I was advised by several south-country parties, with whom I had occasion to come in contact in the course of business, never to smear hill sheep, particularly hoggs. I followed this advice, and left my hoggs unsmeared. I dipped them once and poured twice, and, in short, kept them quite clean. I wintered them on healthy pasture about 300 feet above the level of the sea; but when weighing my wool, I considered I lost about one shilling a fleece, and my hoggs not better or worse after clipping. Since then I resolved to smear every hill sheep I could get in. It is, however, different with sheep fed on turnips and grazed on grass parks.

Mr. **MACPHERSON**, banker, said: I am not prepared to offer any detailed statement on the subject. Dipping may do better in some climates than smearing; but, gentlemen, I am of the old stock, and confess my stronger attachment to the good old way of smearing as being, in my opinion, the best and cheapest for the stock-holders of Badenoch.

Mr. **CUMMING**, Delraddy, and Mr. **CUMMING**, Lynwilg, severally stated their opinion, and gave their adherence to the smearing process—the latter gentleman remarking that from practical experience he could say that smearing materials, composed of 10 pints of tar, 8 pints of good fat butter, and 1½ gallon of pure whale oil, was the best composition a sheep-farmer in Badenoch could use.

Mr. **MACGILLIVRAY**, Ballachroan, gave in his adhesion to tar and butter.

Mr. **ALLAN KENNFDY**, Kinchyle, remarked that his experience was limited, but that he would be in favour of smearing for sheep in high places, but for hoggs going to the low country he thought dipping would be equally beneficial.

Mr. **GORDON**, Coul, in a most humorous speech, said the discussion was more like a dispute than anything else, and continued: In reference to the discussion last year at Inverness, on Professor Levi's statistical account of the Highlands, his Grace of Argyll might be better informed, owing to the region he came from, and we, being at Kingussie, the head of the pine forest, may be said to be *tarred* with the same stick. Before a Campbell set foot on the territories of the Lord of the Isles, or a Marquis of Lorn was heard of, peace was preached from Iona, and civilization was heard of in the Sound of Mull. But, to return to the question, my advice would be that every owner of sheep should just use the material they found best to suit. For my own part, I must say, as the English manager of a Scottish spinning company said, "*Ile* is waste;" so in like manner, but for a far different purpose, I say "*Tar and booter*."

Mr. **CLUNY MACPHERSON** then summed up. He found the almost unanimous opinion of the meeting to be in favour of tar and butter. He continued: The late Mr. Macpherson, Biallid, a practical man of forty or fifty years' experience, told me that he dipped once, and found that he lost so much wool that he would never try it again. But there is no question that we should take advantage of anything tending to improve the stock. You don't smear before they are hoggs; but what would you think of dipping when they are lambs, thus rendering the animal more clean and healthy? We should not be so wedded to old practices as not to adopt new modes; and I conceive that by dipping lambs the advantage would soon be apparent, the animal would be cleaned from vermin, and, by smearing him afterwards, the difference would be seen when the wool came to be sold. I merely throw out these hints for your consideration, and sum up by saying that tar and butter carry the day.

REGULATIONS FOR THE SALE OF CATTLE.

An adjourned Staffordshire Quarter Sessions, for the special consideration of the question of facilitating the sale of cattle without the risk of the dissemination of contagious disease, was held at the Shire Hall, Stafford, on Saturday se'nnight—the Earl of LICHFIELD, chairman, who, in introducing the special business for which the magistrates had met, observed that there was a very strong feeling that further facilities were necessary for the disposal of stock, especially in the case of the smaller farmers, whilst there was a strong indisposition to incur the risk which would attend the general re-opening of fairs and markets. His lordship then proceeded to notice the plan suggested by Mr. Kemp Bourne, of Fisherwick, and which was approved at an influential meeting a fortnight previously, that parishes should be grouped into districts, and that sales of cattle should be authorized to take place in them, when quite free from disease, of animals belonging to farmers within such districts, and that the local authority should lay down such groups, and should grant licences for the removal of cattle to such sales, and they being countersigned there by an authorized person (the auctioneer), should also permit of the conveyance of the animals offered for sale, either back to the premises of the owner, in case they were not sold, or to those of the purchaser. His lordship read the resolutions adopted at the meeting above referred to, and which are to the effect already stated. As to the danger of generally re-opening fairs and markets, Lord Lichfield observed that he thought every one must be agreed that it would be very foolish, for the sake of some little inconvenience, to run the risk of re-introducing the plague, and he did not think they could be very confident that the plague had altogether ceased in this part of the country, notwithstanding the great reduction in the attacks which had appeared in the last five weeks, for a fresh outbreak was reported from the North Riding of Yorkshire, and also within the last week one had taken place at Wem, in Shopshire, at which place two or three animals had been killed which had the disease, whilst nine others which had been in contact with them had been slaughtered. His lordship said he had also heard of another fresh outbreak within a very short period in Cheshire. He thought the plan suggested by Mr. Kemp Bourne, whilst it would afford great facilities for the disposal of stock, would be free from any danger of re-introducing the disease into districts free from it. It might be said that the plan did not meet the case of the purchase of Irish and other store stock from a distance; but it really appeared most important to take every precaution in the case of the sale of store stock, and he would rather see the present restrictions continued, and the sale of store stock entirely prohibited, than that animals from all parts of the country should be brought to these sales. He thought the licences for such district sales as were suggested should be granted by the Court of Quarter Sessions, rather than that the arrangements should be made by the Privy Council, who were far less able to judge what arrangements would be most convenient for the purpose, and most likely to guard against possible risk. His lordship then proposed the following resolution:—

"That in the opinion of this court it is desirable that public sales of fat and store stock be held for groups of parishes in uninfected districts, under licences to be granted by the justices acting in Quarter Sessions, and under such regulations as the justices may think fit."

Lord Lichfield observed that should the Court agree to that or any similar resolution, they might ask him, or appoint a deputation, to represent their views to the Government through the Privy Council. His lordship observed that he had seen in the Stafford paper of that day a letter from the inspector in North Staffordshire in reference to the remarks of Professor Simonds as to the case of plague recently reported there. Professor Simonds certainly guarded himself most carefully against expressing an opinion as to whether there had been a case of disease or not, because he was not in a position to judge, not having seen the animals; and all he said was that he trusted it might turn out that after all it might not have been a case of the disease, because some time had elapsed, and no animal which had been in contact with those affected having been killed, and no fresh case having broken out, that, certainly if no fresh case should break out, in all probability it might be considered that there had not been a case of the disease; but he most carefully guarded himself against giving an opinion. The noble lord added that he was desirous of correcting an impression which might arise from the report of his remarks at the meeting that day fortnight. The statement as reported was "If fat stock were necessary for the food of the country it should be slaughtered at the ports of landing." That might appear to indicate some doubt in his mind whether it was necessary to import fat stock. He had no doubt that fat stock must always be imported, but he did express some doubt whether the importation of store stock to this country was necessary; and he was anxious to raise the question as one on which more information was required, for his own impression was that England, Scotland, Wales, and Ireland could breed sufficient stock for the country to feed without obtaining it from other countries at the risk that necessarily attended the importation of store stock. In the case of fat stock, the sales at the ports might be facilitated and the animals killed before leaving them; but he thought it well worthy of consideration whether the importation of store stock was necessary.

Mr. TWEMLOW seconded the proposition of Lord Lichfield, observing that in the north of the county the inconvenience to which Lord Lichfield had alluded, arising from the want of means to buy and sell stock, was very greatly felt; and he was sure that they would receive such a plan as had been proposed with much satisfaction. At present the regulations were so strict that they offered great inducements to break the law, and they knew too well that it was broken every day; and it was very desirable that the restrictions should be so far modified that they might be more strictly carried out. With regard to the importation of store stock, he did not think any one in the north of the county desired to have fairs and markets generally re-opened for the sale of Irish and other stock, and they would not object to any reasonable precaution against the spread of the disease: for having already suffered, they would be disposed to act on the old motto, *Caveat emptor*. He did not think any farmer, however desirous of re-stocking his farm, would do so with animals which he was not perfectly satisfied were free from the disease.

Mr. LOCKER said he had spoken to many farmers in the neighbourhood, and they highly approved of the proposed plan. For one, he should prefer that the districts for which these sales should be held should not be made too wide; for it was just at this time of the year, when cattle were about to be housed, that special precautions were required; and the reappearance of the disease at Wem was a warning to them to take additional care.

Lord HATHERTON highly approved of the proposal as far as regarded store stock, but thought that less restriction was necessary for the disposal of fat stock, which was required to be slaughtered within a few days of the day of sale. It might be convenient for an owner of such stock for instance to have the choice of sending it to Penkridge or to Stafford, as the time of sale and other circumstances might suit him better at the one place than the other. He saw no risk in removing fat stock from one uninfected place to another uninfected place, provided it did not pass through an infected district.

Lord LICHFIELD explained that by the proposal it was intended that an owner of stock should not be obliged to sell his stock at the sale, but might take it back to his farm; and Mr. MAYNE observed that the farmers were anxious not to be compelled to sell at these sales, as this put them too much in the power of the butchers; and on this Lord HATHERTON did not press his suggestion.

The resolution was unanimously agreed to, as was also one requesting the Earl of Lichfield to lay the resolution before the President of the Privy Council.

CANADIAN AGRICULTURE.—THE PRESIDENT'S ADDRESS.

Mr. N. J. M'Gillivray, President of the Upper Canada Agricultural Association, delivered the annual address, as follows:—

FARMERS OF CANADA,—It now devolves upon me, as president of this society, in accordance with the usual custom, to address you on those important matters that have been occupying our attention for the last three days. So many distinguished agriculturists have addressed you in former years that I feel unequal to the task of interesting you as they have done. But the agricultural interests of the country are so important that it would be a dereliction of duty in me not to try to say something that may be beneficial to us. I have to express my very great regret at the absence of his Excellency the Governor-General, occasioned, as you are doubtless aware, by the death of a near relation. I am satisfied that his Excellency has the sincere sympathy of the farmers of Canada in the occasion that has prevented us from having the pleasure of seeing him amongst us at this time. May I crave your attention, therefore, while I address to you a few practical remarks on the present state and future prospects of agriculture in Canada. Year after year, with good reason, my predecessors in office have congratulated you on the progress which we, as farmers, have been making; and with the greatest of pleasure I find that I might safely do the same. And I sincerely trust that such arrangements are being made that at the Exhibition in Paris next year the display of the natural and industrial productions of Canada will sufficiently prove that their encomium is just. Our prosperity has in the past been great, and still continues to increase. By reference to statistics, I observe that between the years 1851 and 1861 the live stock of Upper Canada has increased 30 per cent., while the produce of the soil attains the high figure of nearly 150 per cent. increase · but allow me to remark that this cannot be taken as a true criterion of the intrinsic prosperity of the country. Such increase may follow from extended cultivation, reclaiming new lands, and from immigration, while older settlements and older reclaimed lands may be decreasing. The true criterion of continued prosperity must be that the lands already cleared are, through better cultivation, becoming more productive. In this respect, however, from the imperfect statistics given on this point, I feel myself at a loss how to speak. But these statistics I look upon as one of the highest importance, and would submit that the attention of this society might profitably be drawn to the advantage of collecting the same. It seems to be an undisputed fact that in the older-settled portions of the United States the yield per acre is becoming less, and on some parts of Canada I am satisfied the same is true. Might we not, then, devote some consideration to this important fact upon which our prosperity so materially depends? The exhibition of this year, however, gives proof that on the whole we are progressing. The stock shown has in number and quality exceeded that of former years; while the machinery and implements exhibited show that the ingenuity of man is still prolific in adding to that which benefits the farmer, and to the means by which mother Earth is made to yield her treasures to her children, and that these are taken advantage of by the Canadian. And notwithstanding the inclemency of the season, especially during the harvest, the varied productions of the soil submitted prove that a good crop has been secured in comparatively good condition. For this, as in duty bound, we give thanks to our God.

It is right on such occasions as this to inquire into the causes that have led to this prosperity, so that from past experience we may draw future guidance, and still advance. First, and most important among these, is the great blessings of peace, which we have so long enjoyed, and for which under Providence we have to thank our connection with Great Britain. May we never cease to value that connection, and the more so, that England continually approves her care for us, for even now there are landing upon our shores some of her noble army to help in our defence in this time of threatened danger. And here let me make mention of that great and now accomplished undertaking of laying the Atlantic cable, through the medium of which we no sooner asked for aid, than immediately the answer came, "*Your help is coming.*" Nothing drains the resources of the country and checks particularly agricultural improvement, like war; drawing as it does so many of the inhabitants from profitable occupation, and carrying in its train such immense destruction of property.

Next to the blessing of peace, I might mention the fostering care of the Legislature, as exemplified in their annual grants to this and kindred societies throughout the country, and in their late endeavours to introduce and extend the cultivation of flax. The growth of the population, ever adding as it does to the working energy of our country, had tended in no small degree to the increase of agricultural wealth; while the railways and public highways, by facilitating the transmission of goods to market, benefit largely the farmers in the more remote settlements. The intelligence of a people is also a most important means toward this end; and our common school system of education, in its steady advance and in the cheapness with which a young farmer may now acquire much theoretical and scientific knowledge, has added greatly to this progress. The same has been the effect of the press, by means of which, instructive articles on agriculture and commerce are daily cirulated and read by our people. Lastly, science has done its part in helping us. It is true that science, in its application to the farming interest, is slower in its effects than when applied to the manufacturing. The best mechanism of scientific research is expensive, and the wealth of the manufacturer generally enables him at once to avail himself of it, while the smaller available resources of the farmer often preclude him from procuring many a machine which would prove of great advantage. Nevertheless, science has been laid hold of by the Canadian farmer, and many are the appliances now, by which at little expense compared to years gone by, the soil can be made to yield its fruits.

These are some of the most important causes of our present prosperous condition. Let us now, reasoning from them, draw some useful instruction for the future. The same means that have proved successful in the past, must prove successful in the future, and if more earnestness and energy are applied to the use of those means, greater will be our progress. Of incalculable importance is a wise and conciliatory spirit towards foreign nations, so that as long as possible we may enjoy peace —especially the cultivation of friendly feelings with our nearest neighbours, the people of the United States; children of the same parents, having the same interests with ourselves, and possessed of the same energetic Saxon spirit, whose effect in the civilization of the world and the improvement of all the interests of civilized nations can scarcely be computed. In any neighbourhood, if the inhabitants live amicably together, interchanging the courtesies of life, they can materially assist each other in many ways: so with nations. The Reciprocity Treaty, entered into many years ago between Britain and the United States, proved of great advantage both to them and to us, as is shown by the immense increase of imports and exports during its continuance. We regret it has now been repealed, but are thankful that it appears the effects will by no means be so hurtful as was anticipated. Nations cannot live without each other's assistance any more than individuals; and we find the American people still continue to buy extensively from us. In the encouragement of immigration the Legislature might do much for us. The more labourers we have in our land, the cheaper will labour be, and the more will be accomplished, thereby adding to our wealth. It is to be regretted that so many emigrants, year after year, pass through our country to the Western States, while in British territory there lies so much uncultivated fertile land. A great deal might also be done by our Government in the establishment of agricultural schools. In Ireland, under the supervision of the Board of National Education, these are among the valuable means that have produced in that country the present advancement in farming. These Irish schools are preparatory to a higher institution, at which young men, generally the sons of farmers, are taught at a cheap rate the usual branches of a sound English education, as also book-keeping, land surveying, levelling, mapping, animal and vegetable physiology, botany, geology, chemistry with practical agriculture, and horticulture—there being attached to the institution a farm on which the practice of agriculture in its most improved forms is pointed out. In this country generally there is little knowledge of scientific farming, and often even by the farmer very little interest taken in the occupation. Hence the daily emigration of our young men to the gold regions or the commercial cities. A step of very great consequence, and from which no doubt beneficial results will flow, has been taken in the opening up of commercial relations with distant countries. And we may congratulate ourselves that the report of the Commissioners appointed for this purpose is so favourable. The Confederation of the Provinces, giving us a more influential position and a name; and the Intercolonial Railway, enabling us at all seasons of the year to exchange goods with other countries, will, no doubt, tend greatly to our advancement. But we must ever bear in mind that the best Legislature in the world can do little to advance a country, unless the individual exertions of enterprising men are faithfully and continuously employed. Therefore, let us, each and all, do our best to promote the agricultural interests of our beloved land.

And now, in conclusion, let me call your attention to some matters that seem to me to have been too much overlooked heretofore. One is the necessity of a more satisfactory adaptation of our stock, our crops, and modes of farming to our climate. Every country, yes, even every district, has a peculiar climate and soil—so with Canada. And while we value the breeds of cattle that are found most profitable in Britain, it is a question whether the same breeds generally prove the most profitable here. Would it not be well to direct attention to the subject, and try if, by care in crossing our present breeds, we could not produce other breeds better adapted to the several parts of our country, which being so extensive, must possess many varieties of soil as well as climate? A similar remark might apply, although perhaps not to the same extent, to our crops. Rotation of crops is a matter that in Canada generally receives too little attention—this more especially in Central Canada. When a field is found to be good and yield well, it is too often the case that that field is cropped year after year until its very life-blood is withdrawn, and years of good manuring will scarcely restore it—one of the causes, no doubt, of the complaint that old settlements do not produce such good crops as new. A regular rotation of crops and regular manuring would certainly prevent this. Root crops are also, I believe, too much neglected. They are incalculably useful in pulverizing the soil, and enabling the farmer to clear it of weeds.

One other matter, and I will not detain you longer. The establishment of regular fairs or markets throughout the whole country, quarterly, monthly, or weekly, according to the requirements of the place, would be of such advantage that those who have not been accustomed to them cannot comprehend it. There, and there only, can the farmer become acquainted with the real value of that of which he has to dispose. An immense saving of time and labour would also be the consequence. Instead of the farmer in want of a good horse, cow, or sheep driving around the country for days or weeks, till he finds the object of his search, half a day at the fair will show him all the animals for sale. He can there satisfy himself better, and save much time, which is money. At such a place also, he will learn, by contact and conversation with his fellow-farmers, any new ideas on the subjects that should interest him, and naturally be induced to emulate his more enterprising neighbour. Let us, then, for the sake of our beloved Canada, put our shoulders to the wheel, and push forward as best we can the agriculture of our land. And while we do so, let us nobly determine to defend what we do possess. If those threatening invaders, the Fenians, do set foot upon our soil, I am satisfied that we, the sons of toil and subjects of a beloved Queen and Government, will give them such a reception that they will regret that they ever attempted to molest us.

CUMBERLAND SHORTHORNS.

Since the returns of the cattle plague began to show such a visible decline of the disease about two months ago, the trade for cattle has begun to gradually right itself; and although fairs are still discontinued, much good store stock has been changing hands by private treaty; indeed, all over the country at the present time are to be found droves of good beasts passing from the locked-up pastures to lands that have been devastated by the plague, but which are now considered to be in so healthy a state as to be re-stocked. This has naturally been the case with common or store stock; even highly-bred Shorthorn sales have lately been taking place all over the kingdom, and fair prices realised; recently, in our own county, Mr. Hetherington's well-known herd of Shorthorns at Middle Farm, Brampton, was disposed of by auction by Mr. Strafford, and very fair prices were given for the animals; in fact, several of the higher bred cows made prices ranging from 50 to 60 guineas each; and, as a further proof of the confidence that is felt throughout the kingdom, in the abatement of the disease, we may mention that a small herd of pure Shorthorns were recently sold at Yardley, near Birmingham, for just over £2,000. The herd consisted of only 30 animals, and these averaged £66 14s. 2d. each; three of them made each 100 guineas, and two yearling heifers made respectively 115 and 120 guineas a-piece.

It is from these sales that our county has been much benefitted. Mr. J. P. Foster, of Killhow, near Wigton, has been an extensive purchaser, not only at these sales but on former occasions; soon after taking possession of the Killhow estate, and effecting great improvements thereon, he began purchasing Shorthorns at some of the best sales in the kingdom. Two heifers were obtained at the late Mr. Jonas Webb's sale at Babraham in 1863, where Mr. Clark Irving, also a native of this county, bought so largely for exportation. Then followed other purchases from the herds of Mr. A. L. Maynard (of Marton-le-Moor), Mr. J. H. Langston (of Sarsden), and Mr. Robinson (of Clifton Pastures); from the latter place came the celebrated heifer "Revelry," who, with her daughters has won several prizes at the Wigton shows, and was bought for 125 guineas. In 1864 two animals were obtained from the Duke of Devonshire's sale at Holker; and from thence followed, by private treaty, the first-class bull 13th Duke of Oxford, who has hitherto been used with the herd. At Mr. Hetherington's sale, to which allusion has just been made, he bought five animals, including two excellent specimens of a tribe that is so well known and so much esteemed throughout this country, viz., the Troutbeck "Gwynnes," and from these two, a cow "Polly Gwynne," and her heifer "Duchess Gwynne." It is his intention, with the aid of bulls of the Kirklevington blood, to establish and perpetuate the family, that the county may not lose its high reputation for a tribe that is so highly considered in the whole kingdom. Mr. Robert Jefferson, of Preston Hows, was also a purchaser of some animals at Mr. Hetherington's sale, including a "Gwynne" at a high price—likewise Mr. George Moore, of Whitehall, and Mr. G. C. Hope, of Aspatria. At the Yardley sale, Mr. Foster got "Fantail," of the Kirklevington blood, and her daughter "Fantail 3rd"—both at high figures; and as a climax to these he has just purchased, through the agency of Mr. Strafford, a splendid young bull just twelve months old, thick and compact, a good roan of excellent quality, and with fine long hair, from Mr. Betts' magnificent herd at Preston Hall, Kent. This young animal is by "Grand Duke 4th," a son of the best of the three cows which were sold for 1,900 guineas, and out of "Moss Rose," bred at Cobham Park, a daughter of Mr. Bates's "Cambridge Rose 6th," one of the last relics of the famous Kirklevington sale. "Moss Rose" was sold, under a year old, for 260 guineas. In 1862 she was purchased by Mr. Betts, and, with a bull calf at her side, made 400 guineas. The young bull, which is of great promise, and considered one of the best yet bred at Preston Hall, is called "Royal Cambridge," and cost 200 guineas. With so much enterprise and such first-class stock, our county will still sustain her reputation among all her neighbours of the north, and indeed vie with any in the south.—*October 29.—Cumberland Pacquet.*

THE LABOUR MARKET, THE MALT-TAX, AND THE HARVEST.

At the North Walsham Society's Meeting, Mr. **Howes**, M.P., said they must have read a remarkable speech of Sir Stafford Northcote on agricultural statistics, in which Norfolk was mentioned in very strong eulogistic terms, Norfolk not having resisted the gathering of these agricultural statistics. He thought therefore Norfolk stood one of the foremost counties of this kingdom. In looking at what had really taken place, he wished he could congratulate them, but he thought he might say there never was a worse harvest than that of 1865; at least, he remembered none. They had had that terrible cattle plague, which had had the effect of lessening the show to-day in a very great degree, and also of lessening their present meeting. He hoped that next year would have arrived to its full proportions, and that they might escape the annoyance and inconvenience which the agricultural interest had received from the restrictions of cattle; but he could only hope this, for there was no doubt they would have to submit for a time. Speaking of the harvest, Mr. Howes said that he was lately in Durham, and if we had wet here they had a deluge there, and the harvest was standing about last month. If it was painful for him to see the state of the harvest in that county, it was far more painful for him to see the strike in the iron mines. There were 12,000 workmen in that comparatively small county, and £16,000 per week was the amount of their wages. They could conceive what would be the effect upon the trade of that district from such a sum being withdrawn, as it had been, for twelve or fourteen weeks, for he believed the strike was not terminated now. There was no doubt the labour market was, and would be for many years, the subject of the day. Did it affect them? Though they were free from anything like a strike; still, it must be admitted that in different parts of the county they had found the want of labour. Many migrations too had taken place from this to other parts. There were many men who would leave their homes only for a few shillings a week, and as forewarned was forearmed, the question was, "How can this be met?" It was in the treatment of the agricultural labourer—a subject which he had touched upon before, but which he thought might be entered into here, as they were all farmers, and interested in the prosperity of agriculture. The treatment of the agricultural labourer was not easy, but it was more easy than the treatment of the labourer in the manufacturing districts; for this reason—here they became acquainted with the individual character of the men. He congratulated them upon this. Although there had been an improvement, even now the agricultural labourer, his wife, and family were not treated as they ought to be. With regard to the habitations of the poor, that was a subject so thoroughly thrashed out and winnowed that it was unnecessary for him to go into the subject; but they had ascertained what ought to be done, and in a great measure how it ought to be done. He thought the legislature had gone to the extreme of its power in this matter; but perhaps it might do something in sanitary matters, and in enabling landlords who had not a large sum of money at their disposal to do what was required by way of loan. Surely they must come to the conclusion that all that remained to be done rested with them individually. Let them all take this to heart; let them remember that there was a common interest in this matter between landlords and tenants; let them make the home of the agricultural labourer attractive; let him, if possible, have his garden, instead of his allotment half a mile from his cottage, and let that cottage be such as he was entitled to expect. He differed with the Earl of Leicester as to the labourer's tenancy being weekly—he thought it should be of a more permanent character. He thought the house or cottage of the labourer should be made his home; but if it were a mere weekly tenancy, it was impossible for the man to look upon it as his home, because he would be liable to be removed at any time. He believed if the labourer's home was made what it should be, that home and the associations connected with it would have the effect of inducing him to remain in his present employment; for he believed there were no class of men more attached to their county than were Norfolk men, whether landlords, tenants, or labourers. He entered fully into that sentiment, being a Norfolk man and living in the county.

Mr. **Read**, M.P., said: He believed they had in this district secured a fair barley crop, and had harvested it in comparatively fair condition. There had also been an improved price for barley, the best barleys making, as they were aware, 25s. per coomb. This being so, some of his friends said, "Don't say anything about the malt-tax: let well alone." Now, it was not when they had a poor crop, but when they had a good crop, like that they had three years ago, that they felt the pressure of this most abominable tax. It was only two years ago they sold barley, weighing fifteen stones—bright, good, sound barley—for 12s. 6d. a coomb: he had no doubt the same barley would now make 22s. or 23s. He did not believe, any more than it had been with the hop-duty, that if the malt-tax were repealed they weuld be inundated by foreign barley. Mr. Read then denied that the farmer had any so-called "protection," and remarked that they were twitted now-a-days by the saying, "Your friends are in power: now is the time to see what they will do for us." That was very legitimate chaff on their part. He did not think there was any probability of their obtaining at present a total repeal of the tax; but he thought they might be able to substitute another tax to reduce it, such as a tax upon beer. Mr. Read concluded by urging the importance of this question being kept in mind, as he agreed with Mr. Gladstone, who thought there was no *evangelising* influence in beer, though he believed it was a national beverage, given by a kind Providence to be the solace of the poor man, and to cheer and comfort him when he was weary. He believed, further, that by no system could we extract so little good and so much harm from beer as we did by the brewing, adulterating, and retailing of that article in these days.

The Earl of **Kimberley** said: He would speak upon a subject which had been touched upon by his friend Mr. Read—the malt-tax. It was a subject which, perhaps, most interested the people of Norfolk at this moment. Looking at it as a political question, they last year decided that for themselves by declaring they would have members who would vote for the repeal of the malt-tax. He did not complain of this, because it was in accordance with the theory and practice of our constitutional system. Though he was not a malt-tax repealer, he should be considered unreasonable were he to attempt to quarrel with those who were. He had listened with great pleasure to the instructive speech of Mr. Read, which came with great weight, because he might be considered as speaking with authority. He was not going to follow Mr. Read, and should only mention one point. He thought that they had done right by giving up the hope of a total repeal; for he was certain, whichever party might be in power, and whoever might be the Chancellor of the Exchequer, they would never be permitted to take off a tax upon one particular beverage, such as beer, while it remained upon other like beverages, such as wine, tea, coffee, &c. He was exceedingly glad that Mr. Read looked to something like a commutation of the tax, rather than to a repeal; and he hoped the question would be brought before Parliament, so that they might see whether such thing was possible. The noble earl then turned to the question of the scarcity of labour. He attributed much of this to the alteration in the settlement law, which had facilitated the movement of labourers from one district to another. He had no doubt that that question of labour was likely to become one of great importance, and he thought they ought to take every opportunity of considering it. If, however, he were asked if he considered the scarcity a misfortune, he should say that he did not. They knew that the condition of the agricultural labourer for years had been far from satisfactory. They had been on the verge of pauperism; and he would explain what he meant by that. If a man was a married man, with four or five children, on the very first visit of sickness to his family, and he was out of work, he had to go to the union-house. Supposing that another child was to be added to his family, he had to come and ask for assistance for his wife to pass through her confinement; and if any of his children died, he had again to seek the workhouse for assistance to bury them. Did they not consider that this might be fairly called being on the verge of pauperism? Now that was not a satisfactory state of things; and no man could but rejoice at the prospect of something being done that was calculated to raise the labourer from this Slough of Despond. When the labourer found what his labour was worth he would demand better terms; and they had to see how they could make that bargain acceptable. Mr. Howes had pointed out that the landlord might do this. They might build cottages where they were needed; and he believed that would arise out of this movement, not from motives of philanthropy on the part of the landlords, but in order to have a regard to their own interests they must have a sufficient number of cottages. They could not cultivate their farms without they had hands; and they could not expect to have hands unless those hands were properly housed. If they built cottages as a speculation, they could not expect to make the investment pay from the cottage alone; but they must take the cottage, the barn, and the farm-buildings altogether; and then he maintained that the landlords would find that in their cottages they had made just as good an investment as they did in any other part of the farm. The landlords did not expect to get a separate rent from the barn or the cattle-sheds; nor could he expect to get a separate rent out of the labourers' cottages: he must take the farm and the cottages as a whole, then he (the noble earl) had no doubt he would get a reasonable profit from it. He thought the question of wages would adjust itself if they paid attention to the comfort and convenience of the labourers. He agreed with Mr. Howes that there should be more than a weekly tenancy. He thought if there came a greater scarcity of labour they would inevitably use a greater number of machines. The noble earl called attention to the large number and great variety of machines invented in America, owing entirely to the great pressure upon the labour market. He had no doubt that the example of America would be followed here should the scarcity long continue. In conclusion, the noble earl said he could not but look forward to the time when they should be able to deal with the children of the labourers who worked in their fields much in the same way as they dealt with factory children. He did not say that the time had yet arrived, but he thought by-and-bye they would be able to get some law passed similar to that now in operation with respect to factories. He thought that was one of the good results they might look forward to as arising from this question. They might depend upon it, although there might be a severe pressure upon them individually for a time, and although they might have difficulties to face, he believed they would see the time when their labouring population would be raised in comfort and in intelligence, and thus all around them would be raised, and the country would be made more prosperous.

At the Blofield and Waltham meeting, Mr. E. **Fellowes**, M.P., said: For the last twenty-five years, I think I may say, this country has enjoyed a state of prosperity unexampled in its annals, and I may say perhaps unequalled, certainly unsurpassed, in any other country of the globe. During that time we have seen our commerce extended into all parts of the globe; we have seen the distant seas covered with British ships; we have seen new markets opened for our commerce and our manufactures; and in this instance alone we have seen great symptoms of increasing prosperity. If we turn to the agriculture of the country, what enormous strides towards improvement have been made during the last twenty-five years, owing to the skill, the intelligence, and the energy of the British farmer! There was a time, not long since, when all the energies of the occupier of the land were called forth to meet difficulties which some believed to be insurmountable; but the skill and perseverance of the British farmer were undaunted; when those difficulties arose his energy increased, and those difficulties vanished from before him. Look, again, to our manufactures, to the enormous wealth that has been amassed in our manufacturing districts. We see places which were villages ten years ago, having but hundreds of inhabitants, grown into towns in which dwell thousands of people; and such has been the increase that the population has not been equal to the requirements of the manufacturers, and they have been obliged to go elsewhere, beyond their own legitimate resources, for help and assistance to work their mills. Well, during all this period of prosperity in this country, has the interest of the labouring class been neglected? If we look to what has been done by the Legislature during the last twenty years, shall we not find that numerous Acts of Parliament have been passed with a view to ameliorate the condition of the labouring class of this country? Have we not seen large sums of money expended by Government and by private hands for the improvement of the labouring class, in schools, in cottages, and in other ways? And have we not seen also the great improvement that does exist in many parishes, and in several instances amongst the labouring class? I quite agree with my reverend friend who lately addressed you, who stated that to a great extent a difficulty does exist of getting domestic servants, and I perfectly agree with him that such is the case; but such will be the case as you advance in civilization. As you attempt to raise the lower class of people in the social scale, as you give them education, you render them more likely to think themselves equal with yourselves, and render it more difficult to get them to act as domestic servants. They, and such must be a natural consequence, look to a higher sphere of life. It is not, as my reverend friend says, that class alone that has risen in the estimation of the world, but all classes have advanced with rapid strides. None of us hold the same position as those who, filling like situations, went before us. Is not the farmer of to-day a far superior man to the farmer of fifty years ago? He lives in a greater state of luxury; he lives in far greater affluence, than the farmer of half a century ago. And so it is in every grade of society in this country. If we take the manufacturer, the commercial man, the agriculturist, or the labouring class, we find that all have risen to a certain extent in the social scale. Well, gentlemen, there is no doubt that the great increase of prosperity in the manufacturing districts may have been of great gain to the millowners in some respects, but it has been to a great extent detrimental to the interests of the agriculturists. What I allude to, and what I wish particularly to draw the attention of those whom I address this evening to, is the great and growing want of labour in the labour market. I believe this has arisen in a very great degree from the fact—and an admitted fact—that the manufacturing interest has increased to such an enormous extent that their legitimate population is not sufficient to carry on their works, so that the manufacturers are obliged to go into the agricultural districts for the purpose of getting more labour to work their mills, to the detriment of the agriculturists. Now, I know it to be a fact, within my own knowledge, that whole families in different parishes have been swept away—father, mother, children, and the whole tribe of them—to go into the manufacturing districts. And, unfortunately for us, as far as my own experience goes, it is the honest and industrious labourer who goes into those districts, and it is the idle labourer who remains behind. The honest and industrious labourer has found this, that if he goes into the manufacturing district he can earn high wages, obtain work for the whole of his family, get comfortably housed, has no particular distance to go to his work, and knows very well that as long as he continues to work he may obtain an excellent livelihood. It is not so with the idle man, who will not put himself to hard work. He will remain behind, because he knows it is no use his going into another district unless he is prepared to exert himself to the utmost; and he knows full well that if he remains behind he must be supported by somebody, and that he may continue to practise his idle habits. If it be an admitted fact—and I presume it will not be gainsaid—that the labour market is not so well supplied as it used to be, and in consequence of the circumstance to which I have allnded, the real question for us to consider is how is this to be counteracted by us? There is, unfortunately, I know, existing in many parts of the country a sort of independence—aye, and of insubordination—owing to the great scarcity of labour. I have heard of numerous instances where labourers object to being found fault with by their employers, and where employers will hardly dare speak to them, because they will say, as they have said in many instances, "If you are not satisfied with me there are plenty of others who will employ me." This has been going on to a great extent in many parts of the country where there is a great scarcity of labour; but I hope it is not the case in this district. What we have to gaurd against is, the increasing want of labour extending into our own district; for, although we may for a time counteract the great want of labour, by our reaping, mowing, and other machines, it may be most inconvenient to the agriculturists should that great scarcity continue for any length of time. There is yet time, I think, for us to avert what I regard as so great a calamity. But how is this to be done? My belief is that we must well study the interest of the labourer; we must study his happiness and comfort; we must look to his cottage; we must house him well and comfortably; we must attach him to the soil on which he lives; and we must attach him to the cottage in which he resides, and to the garden which he cultivates; we must make him feel that he is a part of the farm on which he works, and we must give him an interest in remaining at home in preference to seeking work elsewhere. If this be done, my belief is that we shall, in a great measure, prevent our labourers going into distant districts. If this is not done, we cannot be surprised at men going elsewhere, where they can get plenty of employment, plenty of wages, leaving us to take care of ourselves in the best way that we can. We must, therefore, take care of our labourers. In associations like this we are doing everything we can to promote their welfare, and it is with that view that I think you and I are so anxious to uphold and maintain the Eynsford Association. We feel that it is indispensable, and not only our duty, but our interest, to watch narrowly the welfare, the happiness, and the comfort of the labouring class; and unless that is done, we must take the consequences. Depend upon it, they are the real friends of the labouring class who look after their moral and social welfare and their mental improvement: those are not the friends of the labouring class who will instil into their minds ideas and notions which they have not the learning to understand, nor the keenness of perception to see that they are fallacious.

The Rev. W. HOWARD, Vice-Chairman, said: Several remarks had been made as to education, but he hoped and trusted that no one would suppose that the middle classes of society objected to a liberal or fair education to the lower classes, but that education was not required further than reading, writing, and arithmetic. They would see the truth of this when they remembered the early age at which children had to go to work—if more than this were put into their little minds they would be unable to retain it. He was of opinion that the education in the form of reading and writing should be from the Scriptures; and then he thought those children, who were yearly examined at the prize scheme, would not disclose that ignorance of Scriptural truth, which he saw that the bishop of the diocese and others had observed and commented upon at the late meeting. The middle class, as a body, were always ready to support the clergy in anything that would benefit the community; but he maintained that the funds of this association ought not to be given to people as a bonus for sending children to school for a certain number of days, when they had the option of sending their children to that school for the nominal sum of a penny a-week. He trusted that, as far as the want of labour was concerned, the remarks of the chairman were not so applicable to the eastern division of the county as to the western, the eastern division being more divided and sub-divided than was the western.

Mr. LEAMON then referred to the remarks of the Lord-Lieutenant at the Docking Association. The speech itself when criticized would show that on Lord Leicester's estate the labourers had been worse provided for than the farmers' cattle. His lordship admitted that he wanted from 900 to 1,000 labourers on his farm, and that although his attention had been drawn to the matter for the last thirty years, he was now the owner of only 400 or 500 cottages, accommodating the like number of heads—this number including, as he (Mr. Leamon) supposed, males, females, and children. Lord Leicester also said that the best investment a gentleman could make was to build cottages on those estates that had none upon them. The middle classes of course had been long aware of this fact, and did not require any editorial remarks, such as appeared in one of the Liberal papers, to draw them to that conclusion. Lord Leicester said he built several cottages in certain parishes which he named; but when he remembered that those parishes embraced 6,446 acres, and had in 1861 a population of 1,486, he (Mr. Leamon) thought there was plenty of room for his lordship to build cottages there; and the fact that his lordship was lord of the manor in chief of these parishes ought not to be lost sight of. No doubt those who built cottages there had to pay a very smart fine when they took them up again. When they looked at the cottages throughout the country, they would find that those most dilapidated were those which were copyhold, and more especially those which belonged to the lord of the manor himself. The lord of the manor had not built the cottages. Other people had built them; and when they came to require repair, they very seldom got repaired from want of funds. He congratulated Lord Leicester upon the undertaking he had commenced, and hoped and trusted that he would carry it on with vigour, for on looking through the parishes of Holkham, Warham Saint Mary, Warham All Saints, and Waterden, he found they embraced 11,611 acres, with a population of 1,068. He merely remarked upon these things, because he thought it hardly right, after the middle classes had found homes for the poor, that the landed interest should represent that they had done that, which nothing but the Union Bill that had just passed, and ought to have passed years ago, had compelled them to do. He should be sorry to say any word in disparagement of any gentleman to whom respect ought to be paid; but he held, as a middle-class man, that it was not right to hear remarks of this kind made without commenting upon them; otherwise the middle-classes would be put down as the greatest noodles in existence, and would be said to have neither a voice nor will of their own.

MONMOUTHSHIRE FARMING.—MASTERS AND SERVANTS.

At the Usk Farmers' Club Mr. RELPH said: Mr. Purchase, of Pilston, in 1841, made a tour of Monmouthshire, and got up an agitation for the purpose of improving the agriculture of the county. Among other places which he visited was Usk, and he did me the honour to ask my co-operation. He enlisted a few more in the good cause, and I am sorry to say that I miss this evening from among as many worthy men who then worked with us in the cause of agricultural improvement. I see, however, sons who are worthily following in the footsteps of worthy fathers. Those men had the moral courage to break away from the yoke of ancient usage, to cast off the trammels of bad customs, and conform themselves to the requirements of the age. I believe the young farmers whom I see in this room are acting in a similar spirit. You do not continue to do a thing merely because it has been done. You look round and see what is best, and act accordingly. You are ready, to the utmost of your abilities, to adopt any improvements that are presented to you. Go on as you have done, and leave an example to your children which they may follow. You will have many difficulties to encounter in your path. Many persons will pooh-pooh your efforts: petty malevolence will try to calumniate and assail, and self-esteem, set on stilts, will affect to look down with pity and say, "Behold the man." Never mind, however, what they say: keep ahead; never look behind and suffer the penalty which we read of, of an old lady, who, for looking behind, was turned into a pillar of salt. I consider that one of the great objects of meeting, upon occasions like this, is to say to each other what we think upon different topics. I can tell you, brother-farmers, for I farm a little myself, and I think I can address you as brother labourers: although I do not put my hand to guide the plough in cutting the furrows, I put my hand to the plough in other matters. There is a subject upon which I have thought often, and spoke of, and I should like to bring it before you. As a magistrate, I have often occasion to see employers of labour brought before the bench, and servants brought up by masters for wages, or breaches of contract, which I am convinced might have been settled in three minutes, if some mutual friend had stepped in to try to arrange the matter. There are not many labouring men here, but there are many who handle the plough. Now, a kindly word of advice, a little kind word, would often manage many things which are brought before a magistrate. The labourer says he was hired upon such terms, which the master denies; or the master says he was hired upon such conditions, which the labourer denies? Both are equally convinced that their version is the correct one. Now, would it not be better if, upon hiring a servant, a master were to put down in his pocket-book the conditions of hiring, and give a copy of it to his servant? If the servant could not read, he could find some one to read it for him, and he would then discover at once whether he has properly understood the terms of the hiring. If it is not as he has understood, he can go to his master at once, and point out wherein he does not think the terms are properly stated, and can have it rectified at once, according to his own sense of the conditions, so as to prevent the necessity of the master having to take proceedings at some future time for an offence which the servant is unconscious of having committed, but which the master believes to be in opposition to the terms upon which he hired him. These mutual misunderstandings between master and man do much harm. If a master gets the character of being prone to bring his servants before the magistrates, he will be sure to have the worst of servants go to him to look for situations; and if a servant get the name of bringing his master up, he will be sure to be employed by none but the worst masters. Let there be no misunderstanding. Let the rule be, if a man does good by me, I will do the same by him. Let there be a little forbearance on both sides. Let it be "give and take" on the part of master and man. I should like to see prizes offered for long servitude, for they may be made the means of doing much good. As much depends in this matter upon the temperament of the master as upon the abilities of the servant. If the master has a bad temper, the servant may be ever so good, but if he cannot put up with him he must leave. There is a great difference between a moderate servant and an easy servant. There was one thing which he was glad to see this Club kept from their list of prizes. He thought it a disgrace for a Club to offer a prize to the labourer who had brought up the greatest number of children without relief off the parish. He had said once before, and he would do so again, that it was like offering a prize for the sow which had kept the greatest number of pigs on the trough. It was, in his opinion, degrading to a man. It was offering a prize to a labourer for doing his duty. He thought the object intended was to induce a man to struggle on upon low wages in hopes of getting one of these prizes, and enabling farmers to reduce their labourers' wages below the fair and proper value of their labour. He was glad to see the improvements which had taken place in ploughing. In the infancy of their Club they saw the plough drawn by three horses, "dragging its slow length along," and he remembered the time when almost everybody gave the "cold shoulder" to the wheel-plough. Now he was happy to say that the judges looked with complacency on the wheel-plough. He never found fault with the judges, it was his duty to accept their judgment however much it might differ from his own. He himself brought a wheel-plough on the ground for three years in succession, but the judges would not look at it. In the second year your nephew, Mr. Chairman, that useful fellow in the county, Major Herbert, brought a wheel-plough on the ground, but because it threw the furrow flat the judges would not look at it. There was only one swing-plough in the field to-day, the rest were all wheel-ploughs, but they did not perform such good work as he should like to have seen. He thought many of the ploughmen using them had not had much experience with them; but if they continued their use, and learned how to set the wheel, the flay, &c., he had no doubt that when they met twelve months hence they would do much better; that it might be so was his earnest wish.

ON AGRICULTURAL PRINCIPLES.—TILLAGE.

The farmer's business is often described as being to "till the soil." This vague expression, properly understood, well describes the most important part of his work. It is on the soil he has to operate. Out of it his returns must come. Everything depends upon the condition into which it is brought and kept. Its tillage, strictly speaking, has to do with securing a state favourable to the reception and growth of seed. Several processes are necessary in order to this. In a new country like Canada, where the woody wilderness has to be converted into fruitful fields, clearing and draining must precede ploughing, harrowing, and rolling. Much land is called "cleared," upon which this operation has been only half performed. It still bristles with stumps, or is thickly beset with stones. With such obstructions, it is impossible to bestow effectual tillage upon land, and every farmer should as quickly as possible get rid of stumps and stones. In ordinary circumstances, there must be patient waiting for the stumps to rot. But it would pay in many cases to extract the stumps by force. If several adjacent farmers would club together and buy an effective stump machine, the cost would be trifling to each, and the advantage great to all. A long lever, consisting simply of a stout; tough, round log, will do good service in twisting out stumps that are partially decayed. Fastened with an extra strong chain to the stump, such a lever worked by a good yoke of cattle, will "dislodge" many an "old settler" that left in the ground would be a nuisance, an eyesore, and a hindrance to the plough, for years. Stumps are often allowed to stand in a field when they are so rotten that a push with the hand or foot will send them over. This is negligent, slovenly procedure. By all means, be rid of the stumps and stones as quickly as possible.

When land is wet, but little progress can be made without draining. A soil saturated with stagnant water is utterly unfit to grow crops. It is impossible to work wet lands early in the spring, and thus valuable time is lost. When the seed is in, it will not germinate quickly, or grow fast, or ripen seasonably. An excess of water in the soil excludes the air, which is necessary to promote the assimilation of plant food. It also changes organic materials into vegetable acids, producing the condition which we call a "sour" or "cold" soil. Land not properly speaking wet is greatly benefited by drainage, and there are few farms that would not be rendered far more valuable and productive by this important preparation for culture.

Supposing land to be cleared and drained, thorough ploughing is the next process. Its objects are to make the soil mellow, to change the surface and bring up new portions for contact with the air, to mix the top soil and the subsoil together, to cover and distribute manure, and to destroy weeds. Ploughing should be deeply done. If shallow, it is to a great extent labour lost.

Deep ploughing has many advantages. It exposes more of the soil to the action of light, warmth, air, and moisture; affords more space for the roots of plants; produces many of the beneficial effects of draining; gives more land to the acre, adding deep acres to broad ones; preserves from the evil consequences of both drought and excessive rain; and saves labour by securing larger crops on the same space, than can be raised by mere skim-ploughing. Where shallow ploughing has been practised, the deepening of the soil should be gradually accomplished. By going down an inch lower each time, only a little of the hungry subsoil is brought to the top. In this way, if, in addition to deepening, manure is liberally applied, gradually the whole of a deep seed-bed is pulverized and pervaded with fertilizing material. Subsoiling, as it is called, is an excellent practice. It is performed with a plough that does not turn a furrow, but simply stirs the soil beneath the furrow already turned. It has been known to add one-third to the crop. The importance of having a deep, rich, mellow soil cannot be over-rated. It is a pleasure to work such a soil, a pleasure to gaze at the luxuriant crops growing in it, a pleasure to harvest the abundant products it yields, and a pleasure to count up the gains derived from it. Most people are unaware of the immense good done by mere tillage. It is hardly possible to be too thorough in working the soil, so as thoroughly to stir and mix it. From the fact that a large amount of fertilizing material is absorbed from the air, and that a loose, light condition of soil is most favourable to extracting the supplies thus obtained, tillage not merely prepares the land for a growing crop, but to a considerable extent provides manure for it. Hence the maxim which should never be lost sight of by the farmer, "TILLAGE IS MANURE."—*Canada Farmer.*

PRIZES FOR WELL-CULTIVATED FARMS.

At the Tenbury Society's Meeting, Lord Northwick addressed the meeting at some length on the subject of a prize for the best-cultivated farm and an annual inspection. His attention, he said, had been called to the subject by the practice of his late colleague, Mr. J. H. Foley, and also by the practice adopted for some years past on the estate of the Lady Emily Foley at Stoke Edith, and which he believed to have been attended with the most beneficial results. Having referred to the opinions entertained by Lord Lyttelton and other gentlemen in Worcestershire as to the good results to be obtained from this practice, the noble lord brought the subject directly home to the meeting. He proposed that the area of inspection should be the parish of Burford, and offered to give £5; Mr. Pardoe would give his £5, and other landlords, all lying within a ring fence—although he had not spoken to them on the subject—would very probably contribute; so that there would no doubt be a prize of £12 or £15 to begin with, and that would be worth having. The plan of inspection which he suggested was similar to that which had been adopted at Stoke Edith—viz., for the competitors and others to ride round the estates, and the award to be made by some practical gentleman of great experience, as it had been made at Stoke Edith, by Mr. Jeremiah Mathews, who was very widely known in connection with agricultural matters. He would tell them fairly what his object was in introducing this matter. There were some very good farmers, some very bad farmers, and some indifferent ones. In estimating good farming they would not take simply the crop of turnips or the crop of mangolds, but the state of the farm generally; and if this were done, he believed that in the course of two years or so a great improvement would be perceptible. For instance, if a man had a field full of thistles or docks he would take care to have them pulled up before the day of inspection; and thus good would result. Then, again, as to the landlord class. The inspection would show whose gates, fences, and farm-buildings were out of order; and if the landlord had any pride in him, he would put such things in order or give a good "reason why." An inspection would therefore act well· both for landlord and tenant indifferently. In conclusion, his Lordship said he thought he could answer for his own tenants falling in with his views, and he believed that other tenants would do so; and on the general subject of the courtesy and kindness of farmers, he remarked that he made it a practice to obtain information in going about the country, and that he knew no class more willing to impart it than agriculturists.

The Chairman said he fully agreed in the views of Lord Northwick, but he disagreed with him as to the area. Instead of the parish of Burford, which he thought too small, he would suggest the area included in the prize offered by Captain Pardoe—viz., that of the Tenbury Union. By extending the area, greater good would be effected, and there would be more honour gained by the winner. Again, a system of classification should be introduced, so that the small farmers—those occupying say 200 acres—should not compete with large farmers. He thought such a way of spending their money would be much better than giving prizes for mangolds or swedes, as he was not sure that those were the best crops that could be grown on stiff land: he thought a crop of beans would be better.

Mr. Best said that some time ago he thought the society was—he would not say "going to the bad," but—rather flagging. Now, however, he came to the conclusion that it was going in advance. Lord Northwick, with the assistance of Mr. Pardoe and others, had offered to give a prize for the best cultivated farm, and he was sure that such a scheme would have many supporters. Lord Northwick, had referred to the prizes given by Lady Emily Foley. Now he (Mr. Best) knew the district of Stoke Edith, and also the good those prizes had effected. He was acquainted with several of the gentlemen who had taken those prizes, and had been over their farms, and he must certainly say that he knew of no estate that was better farmed, or in such a high state of cultivation as the Stoke Edith. That horrible weed called "scutch" was not grown there. In the Tenbury district they were tormented with it, but at Stoke Edith they had none; and he felt convinced that if the landed proprietors in the Tenbury district would only support the society in the way Lord Northwick, the Chairman, and Mr. Pardoe, had always done and intended to do, there would be no "scutch" in that district, and that the farms would in time reach as high a state of cultivation as Lady Emily Foley's estate. In reference to the prize which he had offered for the best crop of mangolds, Mr. Best expressed his opinion that it was a crop which ought to be grown in that district, the soil being clay. In conjunction with his friend Mr. Cocks, he had looked over the crop of the only competitor—Mr. Strafford, of Orleton—and had found it so exceedingly good, as well as his farm generally in so high a state of cultivation, that if the Society thought proper he should be very happy for Mr. Strafford to have the cup. A friend of his had offered next year to give a cup of the value of 10 guineas for the best crop of two acres of mangolds grown within the Tenbury Union, and as he (Mr. B.) would guarantee the cup, he hoped that landlord and tenant in the Tenbury Union would promote the object; to which he would suggest the addition of a 10s. sweepstakes.

The Hon. and Rev. C. S. Cocks, in the course of his reply, spoke strongly of the science of agriculture as being the greatest of all sciences, as it embraced the sciences of chemistry, botany, mineralogy, mechanics, and others. But science, he said, was not all. The motto of the Royal Agricultural Society, "Science with practice," was the great thing by which they must be guided. Gentlemen who wrote in books and went entirely by theory were very useful as adjuncts, but they all knew that they could not farm entirely by books. If so, they would want a book to suit one soil, and another book to suit another kind of soil. The light-land and the heavy-land farmer could not pursue the same system. He knew that from experience, having farmed both light sand and heavy clay; and, surprising as it might seem to many people, he would rather farm the heavy clay. He believed there was more to be got out of heavy land, and that the farmer of it had more strings to his bow than the light-land man. From heavy land, with good drainage, good manure, and other improvements, there was a great deal to be got, if the farmer had a good tenure. For instance, there were hops—a very pleasant feature in that neighbourhood—and orchards, which the sandy man could never indulge in. Again, the feeding of cattle, the dairy, cheese, and other things, while the sandy man had to depend on his turnips and sheep. The latter was much the easier style of farming, but the clay farm was much more interesting. A friend of his (Mr. C. W. Hoskyns), who wrote "Talpa; or, The History of a Clay Farm," did not take the same view as he did, and seemed rather chocked by the difficulties to be encountered; but he (Mr. C.) had been for a good many years on a clay farm, and hoped he should live to be so many more.

Mr. Mason said he saw some very good ricks at Mr. Best's and other places, but he had also seen a great deal of bad farming, and he was sure that if Lord Northwick had been with him he would have said that improvement was much wanted. As to the approaches to some of the farm houses, he never saw anything so bad; while some of the land was in as bad state of cultivation as anything he ever saw. He hoped the new system about to be introduced would improve the district altogether, for it was much needed. The great thing was to pull together and try to improve. If they were to go on in the old, slow-fashioned way, they would have no profit; there was not much to be gained by the adoption of the best plan. He thought Lord Northwick's plan for inspection of farms one of the best things that could be adopted, because then landlords would see the old buildings and the bad approaches to farm houses. He would strongly impress upon all the importance of good farming; but to do that they must have good drainage. Then farming might be profitable; but as long as the wet was allowed to remain on the land, and there were bad approaches and bad buildings, nothing but ruination could ensue.

THE HARVESTING OF THE MANGOLD CROP.

BY A PRACTICAL FARMER.

The mangel wurtzel crop, or, as it is now familiarly called, the "mangold" crop, has become of national importance. Its almost universal growth and extraordinary bulk per acre make it one of the most desirable crops to cultivate. The mode of culture is now so well understood, and the varieties are so many and so good, as to be of easy adaptation to almost every kind of soil. The long varieties and globes are well suited to all rich and deep soils, whereas the globes only are properly applicable to shallow and inferior lands. The long sorts strike rather deeply into the soil, but the globe sorts grow more on the surface, and spread their fibres all around. The best varieties only are worthy of cultivation, and these soon become degenerated, if not carefully grown and renewed by selection of the best bulbs, from which to produce the seed. The long sort, called "cow-horn" red, has long been popular; but the palm is nigh being wrested from it by the improved variety of long yellows. Both varieties, if grown from the best stocks, are exceedingly valuable, and will, under proper culture and upon good soil, produce astonishing crops, frequently attaining a weight of from forty to near fifty tons per acre of bulbs only, as common field crops. The best yellow globe sorts are fully equal to them on like soils and culture, and will certainly keep better; but the general run of globe varieties are not quite equal. The red globe sorts, so far as my observation has gone, are not equal to either of the above kinds, but are very hardy, and probably on that account suited to inferior soils or cold climate. The various kinds have now become so well acclimatised that they may be profitably cultivated upon every variety of soil, and under many disadvantages of aspect, shade, stiff, and imperfectly-drained lands, the great thing being to watch carefully every opportunity for preparing the soil and speedily getting in the seed. The great desideratum in the growth of the mangold crop is the production of a good friable mould. If this can be obtained, then with manures, and good seed well got in, a crop is ensured. In the district from whence I write, about one-fourth of the green-food crop is the mangold crop, and I could point out several farms where the crop will in this season average about forty tons per acre. What an immense supply of excellent food! and this is not all: if well harvested, the bulbs will keep in admirable order till the ensuing spring. The writer has now upon his farm some that were harvested at this period of last year, and are yet tolerable food. It is a common practice to reserve a stock for the service of the porcine race during the summer, and with great advantage to them. In fact, it constitutes the chief food for pigs till near harvest time comes round again. Sheep, too, thrive admirably upon them. Just when the turnips are done, and the grass is slow to come, they form the connecting link between turnips and grass. The introduction of "the mangold," its improvement, and the general management of the crop and its uses, have proved one of the highest eras in modern agriculture. Its value can scarcely be estimated. I therefore, with more than ordinary pleasure, pen a few lines to describe or point out some of the best courses to be pursued to ensure the safety of the crop. In the first place every grower should be very watchful lest an untoward season should come upon him. It is wise to wait the full growth of the crop, which is plainly denoted by the great majority of the leaves becoming yellow. When that is the case the crop is ripe, and the sooner it is secured the better. This unfortunately (for the most part) happens in the midst of seed time; consequently the grower is often perplexed whether to break off and secure his mangold, or continue his seeding. Perhaps a litle forethought in many instances might overcome or obviate these difficulties. Every farmer must lay it to account that it will have to be done before frost comes; so he must provide accordingly, or he had better be without his crop. The process of taking up is straightforward and simple enough. My own practice is to have all the operations going on simultaneously: women precede the cartage, and with both hands break off the leaves close to the bulb, and put them in rows or heaps for leading off at convenience, or occasionally they are strewn about and ploughed in. We endeavour to keep so far ahead with the stripping of leaves as to make sufficient room for the plough and cartage. This is done thus: A skeleton plough, or a common Ransome or Howard's plough, without the mould-board, is passed along under the rows, so as to lift the roots or bulbs up, and loosen them so that the men can readily take them and throw them into the accompanying cart, taking from seven to nine rows at a time. The carts take them to the place for graving, and the whole is so regulated that all are kept going. The grave is usually set out about eight or nine feet in width, and the slant upwards finishes in a point at about five to six feet in height. Straw or stubble is drawn out in "haulms" or "yealms" as for thatching, and with these the grave is securely thatched and made safe by spits of earth being thrown upon the sides. In this state the graves are left for a short time in order to permit any heat from fermentation to escape; they are then partially earthed up to within about a foot of the top, and again left till signs of severe frost appear, when they are finally and securely earthed up, so as to defy the severity of the hardest of frosts: in this way we get on rapidly. Ten or a dozen women stripping leaves will keep six or seven men filling carts; boys drive to the heap or grave; the carts are quickly backed to the end of the grave, shot down, and off again. The gravers pack them in order, taking care to make even sides, so that the thatching will shoot off the rain, as it is essential to good preservation that they be kept dry and free from fermentation. If the season is a difficult one and much rain occurs, the graves must be of less width, and be left as long as possible unearthed, so that all evaporation may take place before the final earthing. Should an early frost attack them, they must on no account be taken up till all signs of the attack have passed away, and they show unmistakable signs of renewed growth. In an open season the roots or bulbs will soon put forth small leaves; after this they may be graved with safety, providing nevertheless not to make the graves too wide. The farmer must in this, as in all his other business, use his best judgment as to the proper time of taking up, the manner of graving, and time of final closing the grave. He may rest assured that if they are graved in a frozen state certain destruction is the consequence. In fine open winters many of our graves remain earthed, but with their tops merely covered with a thick haulm of straw. If there is heat in the grave such a course is by no means to be condemned, but they must be closed when frost puts in. It is not only the proper security in the autumn, but they require attention during winter and spring. If a frost is very intense, the grave should have a fresh covering of straw, haulm, or long muck. If unfortunately the grave receives injury from frost, it should be partially uncovered as soon as possible after the frost is gone, to be covered again if necessary on the approach of another. These matters all depend upon the farmer's judgment. In the early spring the graves usually require air: if not given they take harm, as the bulbs begin to vegetate. No rain, however, must be admitted. It is best for the stock that the consumption of these valuable crops should be deferred till the approaching spring, when they are invaluable.

LIFTING AND STORING ROOTS.

The keeping properties of roots are greatly injured, and frequently altogether destroyed, by the action of frost, if not lifted and stored before it sets in. Light hoar frosts, occurring while the roots are still well protected by their foliage, have but little or no deleterious effects on them; but when repeated, and the frost is so intense as to prostrate the leaves, the cells of the roots filled with juice become frozen, and, though not perceptible to the naked eye, are ruptured, and, when followed by intense sun, putrefaction sets in more or less, and roots, when stored in this state, soon putrefy and become a mass of rottenness. Hence the necessity of lifting and storing roots before such untoward circumstances set in, and the folly of leaving them out because the roots are still growing, in order to obtain the greatest possible weight of produce from the land, though the extra weight thus obtained rather tends to decrease the value of the feeding properties of the produce than increase it, besides endangering the safety of the crop. Instances of this mismanagement occur every year with unthinking farmers, who, tempted by the continued growth of the roots from the mildness of the after-season, leave their roots out, when the softness of the after-growth, induced by the mildness and humidity of the season, only renders the crop more susceptible of injury by sudden and severe frosts.

The weather we are now enjoying is highly favourable to lifting and securing the root crops; it is important that this operation should be vigorously set about when the weather and land are dry. The safe keeping of the produce and the comfort and health of those employed, and economy of expenditure, alike demand it; and the land is not ill-used, poached, and its fertility injured by the necessary trampling and carting.

If the potatoes are not all out of the ground and pitted or housed, no time should be lost in doing so. Potatoes taken out dry and properly pitted keep well; and if mixed in the pitting with a little dry turf-mould, sand, or even dry earth or ashes, their safety is greatly increased; and when stored in the house they should be mixed with some of the above materials, and covered with one or other of them, so as to exclude light; for when light falls on the potato the part exposed to it becomes green, and a poisonous quality is engendered, which renders the potato unpalatable and unfit for food. When pitted, it is better to leave the top of the pit unclosed with earth, so as to permit the escape of any heated air that may arise; but the open part should be covered with potato haulm, rushes, or litter, to prevent wet coming down. In a fortnight this covering should be removed, and the aperture firmly closed with earth, and finished with sods or scraws, if they can be had; if not, a little straw pulled so as to hang down a little at each side, and topped with earth, prevents wet from entering, and the sides of the pit falling.

Turnips and mangels should be carefully lifted, without bruising the sides of the bulbs, and the leaves twisted off by hand, instead of cutting them off with a knife or old reaping hook, though the latter mode is the most expeditious. Some years since it was the custom to cut off the small roots and scrape or shake off the loose earth. But we now know better, and the improved practice is to leave on all the small roots and the earth that adheres to them, as they keep better. These roots are best stored by heaping them against the north aspect of walls, if they are to be had, with a base of six or seven feet wide and as many high, and thatching them with a thin layer of straw or other litter. If walls are not to be had, any northern aspect that is available should be chosen, so as to protect them from the influence of the sun; but if that cannot be obtained, any open site that is dry underneath will do, building the heaps six or seven feet wide and as many high, shaped in potato-pit fashion; and if a little brushwood can be had, a thin layer or two amongst the roots will keep them from tumbling down. The long varieties of mangels do not need this so much, but the globular varieties and swedes will. If straw or other litter cannot be spared or obtained, these roots may be covered with a thin coat of earth. In this case a few drainage tiles laid through the centre, from end to end, will permit a circulation of air, and prevent undue fermentation.

Carrots and parsnips are to be lifted carefully and stored in the same way as swedes and mangels, but from the closeness with which they fit together are more likely to heat, and must on that account be made in smaller heaps; three to four feet wide at the base, and about the same height, will be large enough. Mixing them with sand or turf mould will be of great service in keeping them sound and fresh, particularly for table use. The parsnips particularly will require the sand, moist turf mould, or dryish clay; for if allowed to dry or get shrivelled the flavour of them is not so palatable as when kept fresh, and on this account it is found the best mode to leave them in the ground, if it can be spared, and lift them as required for table use; but when the ground is required for other purposes they occupy but little space, and may be kept equally good by storing them as directed.

The foliage of swedes and mangels possesses much nutritive matter, and may be turned to profitable account for feeding milch cows or store stock, providing they do not get so much as to induce scouring, or by ploughing them into the ground they grew upon. In storing large breadths of these roots, it is seldom possible to feed off all the tops in time while they are good, and on this account stripping the roots of their full-grown leaves daily for a month or so before lifting them is found judicious and economical; but in case this is not practicable, ploughing them in as green manure returns to the land again a large amount of both the organic and inorganic matter extracted from the soil, manure, and the atmosphere in the growth of the plants, thus enriching the land for the benefit of the after-crops.—*Irish Farmers' Gazette.*

CABBAGES FOR SPRING FEEDING.

The feeding value of cabbages is well known to many farmers, but not so generally appreciated as they should be, particularly the early sorts, which come in opportunely for sheep, especially ewes and lambs, affording a nutritious and milk-producing food, at a period when it is of the utmost value. We therefore remind our readers that this is the best month for finally planting out the cabbages sown last June, and early in July, for this purpose.

Cabbages require deep cultivation and a liberal dressing of farm-yard; but, like turnips, good crops are produced by part farm-yard and part artificial manures—say 12 to 15 tons of the former, and 3 to 4 cwt. of the latter per Irish acre; with these proportions, and deep and thorough cultivation, good crops are produced, which may be consumed in time to crop the land with barley, mangels, or swedes. For early spring use dwarf early Yorks are best; and for use farther on, the Nonpareils are best. The farm-yard manure should be put out and spread evenly, and ploughed in; a good harrowing should follow, after which the artificial manure should be broadcasted and lightly harrowed in. The land should then be gone over with a marking plough one way, and then across, so that there may be no difficulty in the planting putting in the cabbages in straight and parallel rows, at the proper distances apart. A good way to mark the land is to use a Cambridge roller with the disc set at regulated distances apart. For dwarf Yorks, rows 18 inches apart, both ways will suffice; for the large Yorks or Nonpareil, 20 to 22 inches apart, both ways, will be the proper distances. By marking the land both ways, the surface is divided into small squares and the plants are put in with a wooden dibble, shod with iron at the point, where the lines cross. The plants should be lifted with a fork, which preserves all the tender fibrous roots entire, and not rudely pulled up, as is generally the practice, by which the greater part of those fine roots are torn off and left behind. In dry weather a thick, rich puddle should be prepared, into which the roots should be plunged as the plants are lifted. Small or light hands should be employed to carry and drop the plants along the lines for the planters, by which the work goes on expeditiously. Dwarf early Yorks, planted out in September or early in October, liberally manured, will come into use in March and April, and may be pulled, shaking the adherent manure and earth well from them, and carried, fresh and fresh, daily to the ewes or fatting wethers, in such quantities only as may be cleanly eaten up, and are very nutritive and milk-producing.

It is not necessary to wait till the cabbages get close, compact white heads, as it is found by analysis that the green outer leaves are more nutritive than the white heart. Waiting till the hearts are fully formed, therefore, prolongs the time and keeps the crop longer in the ground than necessary. On the contrary, pulling the plants when the hearts are forming gives an earlier supply to the animals, more nutritious, and clears the land earlier than if allowed to become more matured. The judicious farmer will, therefore, go over the crop for the first supply, and pull the ripest plants; others will come daily into use, and when the early dwarf Yorks are used up, the Nonpareil comes in and yields an increased supply.

Early cabbages are also of great use to milch cows, yearling calves, and pigs, and are of great value with oil-cake, or, better still, whole wheaten meal, in maintaining and giving sleeky coats to highly-bred Shorthorns. No farmer should be without a plentiful supply of early cabbages. They come in when turnips are scarce, and, if not well preserved, bad; and fill the hiatus that too frequently prevails between the old and new supply of animal food.

What we have said respecting cabbages applies also to planting out rape, which should be proceeded with at once. Rape comes earlier to use than cabbages, and a valuable feeding plant for sheep of all sorts, milch cows, and store cattle.—*Irish Farmer's Gazette.*

MICHAELMAS RENTS ON CORN AVERAGES.

SIR,—I again avail myself of the return of the close of the farmer's year to send you, for the information of your agricultural readers, and more especially those who may have adopted the system of corn rents, based on the average price of wheat, or of wheat, barley, and oats, a statement of the average prices, founded on the returns published weekly in the *London Gazette*.

For the year ending Michaelmas, 1866, the average prices are as follows:

	s.	d.	
Wheat	46	10½	per imp. qr.
Barley	34	4¾	„
Oats	24	0¾	„

The highest and lowest prices during the same period are as follows:

Highest price.	s.	d.	Lowest price.	s.	d.	Difference. s.	d.
Wheat, July 17, 1866	55	10	Oct. 3, 1865	40	10	15	0
Barley, Oct. 2, 1866	40	1	Oct. 3, 1865	29	11	10	2
Oats, July 10 and 17, 1866	20	7	Oct. 3, 1865	20	2	7	5

I remain, sir, your most obedient servant,
CHARLES M. WILLICH, late Secretary and
Actuary, University Life Assurance Society.

3, Montpelier-square, Rutland-gate, Nov. 8.

P.S. I annex a table showing the fluctuations from week to week, producing the above results. The changes likely to take place before this time next year may render it useful for reference.

WEEKLY AVERAGE PRICE PER IMPERIAL QUARTER IN ENGLAND AND WALES FOR 53 WEEKS ENDING MICHAELMAS, 1866:

"London Gazette."	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.
1865.						
Oct. 3	40	10	29	11	20	2
Oct. 10	41	1	30	4	20	5
Oct. 17	41	11	30	9	20	11
Oct. 24	42	1	30	11	20	11
Oct. 31	42	4	31	0	21	0
Nov. 7	43	4	31	6	21	6
Nov. 14	45	3	32	5	22	0
Nov. 21	46	11	33	7	22	9
Nov. 28	46	10	34	0	22	9
Dec. 5	46	6	33	10	22	8
Dec. 12	46	5	33	2	23	1
Dec. 19	46	8	32	9	22	11
Dec. 26	46	8	32	10	23	1
1866.						
Jan. 2	46	11	32	6	22	6
Jan. 9	46	3	32	9	23	6
Jan. 16	46	1	32	6	22	8
Jan. 23	45	7	32	10	22	10
Jan. 30	45	6	33	1	23	3
Feb. 6	45	10	33	0	23	1
Feb. 13	45	5	33	6	23	6
Feb. 20	45	9	33	9	23	0
Feb. 27	45	5	34	8	23	10
March 6	45	7	34	11	23	5
March 13	45	4	35	7	23	11
March 20	45	6	35	10	23	10
March 27	45	8	36	6	24	1
April 3	44	11	36	9	23	11
April 10	44	9	37	2	24	6
April 17	44	5	37	0	24	2
April 24	44	9	37	2	24	8
May 1	45	5	36	3	24	6
May 8	45	9	36	8	25	0
May 15	45	9	36	4	24	10
May 22	46	1	36	2	25	2
May 29	47	4	36	6	25	4
June 5	47	5	35	4	25	11
June 12	47	1	35	9	25	8
June 19	47	4	36	0	25	9
June 26	48	5	34	4	26	7
July 3	51	0	34	0	26	0
July 10	54	6	35	5	27	7
July 17	55	10	35	1	27	7
July 24	54	0	33	5	26	2
July 31	52	0	33	10	27	1
Aug. 7	51	1	32	11	25	3
Aug. 14	50	2	35	2	26	6
Aug. 21	50	2	34	9	26	6
Aug. 28	50	10	33	8	26	6
Sept. 4	49	7	35	1	25	3
Sept. 11	47	3	36	1	25	2
Sept. 18	47	0	37	1	24	8
Sept. 25	49	8	37	10	24	1
Oct. 2	51	5	40	1	24	3
	53)2485	2	53)1823	10	53)1276	2
Average	46	10½	34	4¾	24	0¾

THE LABOURERS' WAGES.

It is a very nice point as to how far a Clergyman should be suffered to interfere with the more secular business of his parish or district. From the continual practice he has, and the consequent confidence he feels, the Divine is too apt to take a lead in public that neither his abilities nor his position would warrant. There is, for instance, just at present a very growing prejudice against the Rector sitting on the Bench of Magistrates, as it is certain enough that of late there have been few objectionable decisions but where some Reverend law-giver has been actively concerned. At open dinners, again, or other such occasions, the Priest is tolerably sure to say too much, and to talk as an anthority upon matters of which in reality he knows very little. The blame may appear, perhaps, to rest with his fellow-citizens for putting him so forward; but all who have any experience of country life, more particularly, are aware how difficult it is to keep these gentlemen in the background. The very rawest of Curates must have something to propound; and whether it be a cattle show, a poultry show, or a flower show, an archery meeting, an educational meeting, or a fancy fair, the Cloth is certain enough to be in the ascendancy. It is not for us to declare whether the Vicar should go a-hunting, or pass sentence on poachers, or breed better pigs than his neighbours; but rather to touch upon such duties which may come legitimately within his province, as prominent among these is, no doubt, the condition of the labourer. He is the very agent, of all others, who should be of service here. It is his sacred mission to visit the poor man, and watch over alike his religious and moral welfare, if, indeed, the two terms be not something synonymous. The village Pastor, so to speak, should stand between the owner and the occupier in this matter of the workman. If the cottager be badly housed, his advocate should in the first place seek audience with the Squire; or if the ploughman be underpaid, the interview must be arranged for with the employer. The two classes more directly interested do not always come well together over such matters as building better houses or raising the rate of wages. They are inclined enough to answer each other with a *tu quoque* as to minding each his own business; and the Clergyman, from his recognised relations with the three estates, is the person above all others best qualified to act as ambassador, mediator, or even, if you will, as self-appointed referee. He may possibly be not quite "up" in the real merits or many bearings of the case; but as he sees the necessity for interference, so is he called upon to ask for consideration.

The Clergy are just at present engaged upon such a work, and one that will for many reasons command a deal of attention. Labour is getting scarce, and yet the labourer in many parts is poorly housed and badly paid. At least so says Canon Girdlestone of certain districts in Devonshire; while another Vicar gives confirmation to the statement from what comes under his own knowledge in Hampshire. The Canon's report, to be sure, excites the surprise of Mr. Biddell, in Suffolk; while another Hampshire man, Mr. Trask, corrects the Vicar's average in a letter which appears in our columns of this day. Mr. Kekewich, one of the members for South Devon, has also taken up the subject in a speech which, as will be found, has given rise to some further correspondence; while, noticeably enough, the same topic has just been broached in the northern division of the same county, where the lecturer of the evening on Employers and Employed introduced himself "in the double position of a clergyman and the president of a Farmer's Club." The Reverend Prebendary Brereton is, however, already well known for the ability and discretion with which he has associated the responsibilities of these offices, and many of his addresses on the kindred points of the two callings have been widely circulated. We were thus prepared, the more especially after all that has been advanced from the same quarter, to hear him speak to the condition and prospects of the employed with more than ordinary interest; but we confess that we have gone through his paper with some degree of disappointment. The chairman of the Barnstaple Farmers' Club is, to some extent at least, the champion of the present state of things; and if he does not exactly defend a low scale of wages, he shows certain and very peculiar "advantages" attendant on such a state of things. As for instance: "Owing to the numerous farms in Devonshire, and the very graduated rise from the small farms to the large, there is no bar, as in other districts, to an industrious, intelligent, and spirited labourer becoming a farmer; and, certainly, if I were a labourer, I should estimate this chance of promotion as an equivalent for any defect in money remuneration. I would rather receive 10s. where I and my children were not condemned to remain always in the bottom class of society, than 20s. where a social rise was impossible. But as another consequence from this state of things, not only may the labourer in Devonshire hope to rise and become a farmer, but he is, or may become, even as a labourer, socially connected with the farming class, and not unfrequently a sharer and inheritor of the farmer's capital. I am not sure that this close connection between the employed and employing classes is in all respects an advantage to the farmer, though I have no doubt that it ought to be considered a very important advantage to the labourer. The same ladder of smaller and larger farms by which the labourer may rise may be the means through which the farmer's family too readily descends." To those not familiar with the customs of the country this argument will sound as somewhat strange logic. The labourer who would "better himself," or rise in the social scale, must look to low wages as the means for doing so, as he will be more likely to improve his position upon ten shillings a-week than he would upon twenty! In fact, what he does not get in malt he may in meal; and if the farmer cannot give him high wages he will give him his daughter instead thereof. This is an extension of "the co-operative system" that even Lord George Manners himself could never have contemplated. Mr. Brereton, however, is not so sure that this close connexion is in "all respects" an advantage to the farmer. We should think not, indeed! but the rather be prone to ask, Can it be really an advantage in any way, or to anybody? Mr. Brereton himself shows us how the practice pulls the employer down again, while the present price of labour in the district demonstrates that it does nothing to permanently or generally improve the condition of the employed. Putting Devonshire or Barnstaple for the moment altogether out of court, perhaps no surer plan could be devised for the maintenance of a miserable rate of wage, or the perpetuity of a stand-still system of cultivation, than small holdings, little capital, and so slight a distinction in the social scale that the young herdsman or ploughman, who only behaved himself, might reasonably expect to become one of the family. We had hoped that the agriculturist had gradually outlived such times and usages as are here pictured, thanks to education and that spirit of progress which has tended to make even farming something of a scientific and refined occupation. In Devonshire so peculiar a principle of co-operation would seem, according to another speaker, to have come, naturally enough many will say, to such a state of things as this: "Not only were the cottages in a bad state, but the farmer's houses"—at which announcement there was both "laughter" and "applause." But this is not the only peculiarity of Mr. Brereton's address; for while admitting the advantage of putting out work by task, he dwelt upon some of the difficulties that present themselves, such as the want, by the farmers, of a system of comparison; and evidently himself gave the preference to payment by merit:—"The householder in the Parable showed his right to do what he would with his own by giving to all the labourers the same wage; but perhaps the Devonshire employers would sometimes best show their independence and do most good with their money, if they used more discrimination in awarding it. A uniform and customary rate of wages is very apt to put the labour of the idle and the diligent falsely and mischievously on a level. Many a thirty shillings that is now paid in equal sums to three labourers for their hire, would be more profitable to the employer, and much more beneficial ultimately to the employed, if one of the party found that he had truly earned and received 15s., and another only 5s." But, surely, piece-work would, practically, be a far more satisfactory method than this! Moveover, how would the family-connections stand it, supposing that Cousin John got his fifteen shillings a week, and Uncle Bill, though he was much more of a gentleman, only five? However, the North Devon farmers cordially went with the lecturer in this wise: "That this meeting cordially approves of the sentiments contained in the excellent lecture the president has just delivered, and would particularly impress the importance of paying wages according to merit, and that more attention be given to the improvement of labourers' cottages." Mr. Biddell by this time may not feel quite so much surprised as he has done; while Lord George Manners, whatever the Duke may think of it, may point to some systems of co-operation that are already in practice, and by no manner of means merely "wild notions."

The following is a continuation of the correspondence from page 481:

"Oct. 27, 1866.

"Sir,—In an account of an agricultural meeting at Woodbury, given in the *Devon Weekly Times* of the 26th of October inst., you are reported to have spoken thus:—

"'I wish to remark that I have seen, perhaps, with some little degree of pain, some reflections which have passed through the public press—I don't mean the press of this county, but the press of England, for it was mentioned in a letter in the *Times*, that in this county we were giving most niggard wages to our labourers. Now, I cannot endorse that opinion, because I do not believe that in this county the labourer is badly paid. I don't mean to say that he is paid as he ought to be—that is quite another question; but that he is paid small and niggard wages, and such that he cannot live on, that I absolutely deny.'

"In three letters which have lately appeared in *The Times*, after a four years' intimate personal acquaintance with every farmer and labourer in my large parish of Halberton, in North Devon, I deliberately made certain statements respecting the wages of agricultural labourers. The sum and substance of my statements briefly is—that in Halberton, certainly with rare exceptions, and to the best of my knowledge in much of the surrounding district, the wages of the common agricultural labourer are no more than 8s., and sometimes only 7s. per week, often but partly made in coin. Will you be kind enough to do me the favour of informing me—first, whether it is to my letters in *The Times* that your remarks above quoted referred; secondly, whether in that case you intended by those remarks to question the accuracy of my statements, or merely to avow your opinion that a labourer who receives 7s. or 8s. a week, sometimes only partly paid in coin, is not 'badly paid'?

"Your obedient servant,

"S. T. Kekewich, Esq., M.P." "E. GIRDLESTONE.

"Peamore, Oct. 29, 1866.

"Dear Sir,—The remarks which I made at Woodbury on Wednesday last are correctly stated in the *Devon Weekly Times*, although the report is more full in the *Exeter Gazette*, which I will take the liberty of sending to you. They had reference to two letters, the one from Mr. Biddell, near Ipswich, the other written by yourself, and both inserted in *The Times*. I certainly concluded from those statements that they applied to a large part of the county, and not merely to the district in which you reside. With regard to the cases mentioned by you of labourers in your own parish I have no reason to doubt your accuracy, but I demur to the opinion that low wages are generally paid to the labourers in this county. I well know that there are districts in which the amount is far too small; but I also believe that throughout the greater part of this county the wages of agricultural labourers were never so high.

"It is very difficult for me to give an answer to your second question—viz., Whether it is my opinion that a labourer who receives 7s. or 8s. a-week is 'badly paid—as it must depend on a variety of circumstances, whether he is an able-bodied labourer, capable of doing many kinds of work; whether he has task-work during a great part of the year, and the amount paid for it; whether he pays rent for his house, and whether he has perquisites, such as liquor, allotment-ground, and corn at a reduced price. You are well aware that the rate of wages depends on supply and demand, the prices of the necessaries of life, and the capacity of the labourer to do his work. One man will earn 12s. per week, and another only 8s. a-week by his labour. The question of his having a wife and family has nothing to do with the amount of his wages, although the number of his family and the want of means to provide for them must fully entitle him to the charity of his neighbours. A very respectable farmer told me a few days since that the wages which he gave were 10s. and 11s. a-week, three quarts of cider a day, a cottage rent-free, besides task-work, and that he believed it to be the general rate of wages in this district. My own observations, derived from the applications to the Board of Guardians, would lead me to the same conclusion. I give 11s. a week to those who work constantly for me. Some of them pay 1s. a week for rent, and others live rent-free. I also hire occasional labourers at 15s. a week, but they are men capable of doing a great quantity of work of different kinds, and I doubt whether they are better off than others, as they pay £5 a year rent, and have no allowance of liquor. I have endeavoured to ascertain the amount of agricultural wages paid in the Midland counties, and compare it with that paid in our own county, and I find that in the former wages vary from 12s. to 14s. a week, but from this must be deducted 2s. a week for rent; besides which, there is no allowance for liquor, which costs 1s. 6d. a week, and the necessaries of life are dearer than in Devonshire, so that I much doubt whether the labourers in the Midland counties are better off. However, I will not pursue this matter and subject further, or discuss the various matters entailed in your statement, as they would lead me far beyond the limits of a letter.

"I remain, dear sir, yours faithfully,

"The Rev. Canon Girdlestone." "S. T. KEKEWICH.

"Canons House, Bristol, Nov. 1, 1866.

"Dear Sir,—The sum and substance of your reply seems to be that in your speech you did refer to one of my letters in the *Times*, that you concluded my letter applied, not merely to the district in which I reside, but to 'a large part of the county of Devon,' and that, in your opinion, whether a man who receives 7s. to 8s. a week is 'badly paid' or not depends upon his having or not having in addition certain other so-called privileges which you enumerate. In my letter to the *Times* I plainly stated that I vouched for wages in my own large parish only; had good reason for believing that the same rate prevailed in the surrounding district, but never said a word about 'a large part of the county of Devon.' I plainly stated also in the same letters that the labourers to whom my remarks applied were able-bodied, and had not only no addition whatever to their wages of 7s. or 8s. a week, except cider, often very bad, but did not receive the whole even of that small pittance in coin. You will, I hope, therefore agree with me that it would have been better if you had read my letters more attentively before you made remarks in public about them. I am quite aware that in some parts of the county of Devon wages are higher than in Halberton and the neighbourhood, for I have already sent labourers for better wages into South Devon. At the same time the facts which I have before me leave me to believe that the extent of the county in which really fair wages prevail is not very large. My idea of a well-paid labourer is certainly very different from yours as expressed in your reply to me; and, as regards your comparison of wages in Devonshire and in other places, I have at this moment a very large number of applications for common agricultural labourers, from almost every part of England, at wages varying from 15s. to 20s. per week, with, in almost every case, house and garden rent free, at well as other additions too many and various to be enumerated in a letter. I shall, of course, feel myself at liberty to make what use I please of this correspondence, and remain "Your obedient servant,

"E. GIRDLESTONE.

"S. T. Kekewich, Esq., M.P."

AGRICULTURAL MATTERS IN ESSEX.

The following discussion took place at the Braintree Labourers' Friend Society.

Colonel SUTTON WESTERN, the chairman, said: Then there was another topic on which he should like to be allowed for a moment to touch: he alluded to a question immediately connected with these associations—namely, the rapid introduction of machinery, which he hoped his friend on his right (Mr. Mechi) would talk about presently. From the intercourse he had with the farmers generally, he understood that the more general introduction of machinery was very desirable, if any means could be devised by which they could get it on reasonably cheap terms, for each individual farmer could not be expected to set himself up in machinery. He was extremely anxious that some means might be adopted in the neighbourhood for forming an association for carrying out their work by machinery, which they could do, if they went to work in the right way, much more quickly and cheaper than either by horse or manual labour. He should be glad to see a few landlords and tenants, and in fact all classes, whatever their position might be, meet together to see whether they could not find some means by which they could bring about an extensive employment of machinery in this district. They had advantages there for such work which were not seen in many counties. Essex was a flat county, and most of the farmers held large fields, and he thought that considering the great difficulty they had in finding labour, and considering also the opportunities afforded to the labouring classes of getting better wages than it was the interest of the farmers to pay here, they ought to think whether they would not be driven somewhat into a corner unless they adopted some such plan as he had suggested for bringing machinery more into play. He thought also they might well consider whether they should not try to keep their labourers at home, by having comfortable cottages for them, and showing, as he had no doubt most of them already did, that they really felt an interest in their welfare. He merely threw these things out as hints; for not being an occupier of land, or having a farm of his own, he could not pretend to speak with authority; yet still he did not go through the world without reading and thinking, and when he saw what was going on in this and other counties it seemed to him that the time was arriving when the cultivation of the land would be carried on under a different system than at present. Of course, landlords must give long leases to make it worth the while of the tenant to expend his money, for it was utterly impossible to expect a man who held his tenure on an uncertainty to lay out any amount of capital; but still he hoped the feeling between landlord and tenant—and he knew he might speak with confidence on that point of their own neighbourhood—was such, as perhaps to render any precautions of the kind unnecessary. But though tenant and landlord might entertain the best feelings towards each other, and not like to part company, still at the same time they could never tell what might happen. Human nature was infirm, and little things might occur which would give rise to angry words between landlord and tenant, and the tenant having expended his capital, such as he could afford, on his land, would of course be left in considerable difficulty to know what to do if he could not remain in his occupation. Now, how were they to meet the difficulty which seemed to threaten them of a scarcity of labour and an increase of wages? To his mind the only way was to strive that those in their employ should be well housed, and to give them cottages in which they could live in decency, cleanliness, and order, and also to give them education: though he knew there were difficulties as to this point, for the labourer was glad to send out his children as soon as he could to help in the maintenance of the family, and it was very difficult to get him to keep them at school. But judging from the long list they saw to-day of labourers who had been for many years in the same employ, he thought they might many of them be taught to bring up their children in such a way as to make them afterwards useful members of society. They must remember that when this society was established thirty years ago things were not the same as they were now. They had no railways in those times, nor had the labourer the same opportunity as now of moving about to other places. There were no means then of his getting away to other places and other occupations; but now he could easily do so, and therefore it was essential for them to consider whether they could not do something among themselves to keep their labourers, and the children they were training up, at home, and not allow them to be led away by the temptations offered in other places. He merely threw out these remarks as suggestions; for he was always glad to say something that might lead to a discussion later in the evening. There was one other subject, which had been brought before them within the last day or two, that he should like to allude to before he sat down. Formerly it was a very unpopular subject among farmers, but they were now beginning to see it in a different light—he meant agricultural statistics. Sir Stafford Northcote, who formerly, with many other members of Parliament, showed no desire for these statistics, made a speech a day or two ago in Devonshire, in which he said the Board of Trade were desirous if possible to collect information of the kind, but they wished also that it should be gratuitous; and he (the chairman) saw, by an account of the meeting, a tenant farmer said that in Devonshire they had no objection to give the information, provided it was not sought for in an inquisitorial light, but that they were left on their honour to give what information they pleased, and it was not to be extorted from them. He himself had for a long time thought it was desirable that they should know the number of acres in the country and the extent of their produce, for without that knowledge he did not see how they were to get a correct account of the position and prosperity of the country. There was one other topic he was particularly interested in, though he did not know how it would be received by the farmers generally. They would very shortly get rid of that system which might have been very well in the time of Queen Elizabeth, but was altogether out of date now—he meant the turnpike gates. He had himself taken considerable pains to get rid of this odious system, and thought the burden of repairing the roads would now be thrown on the different parishes; yet he was sure, when they considered the nature of a system which in England was most objectionable—for they could not go along the road without being stopped as it were by an Austrian barrier—they would agree that the Government had done right in leaving out of the Continuance Act all those trusts that were now free from debt. Of course for those who were not out of debt they had not yet provided a remedy.

Sir T. B. WESTERN, Bart., remarked that it had been said the supply of labour was falling off, but what was the reason for this? Why did their labourers leave them? They left them because they could get better wages elsewhere; and if this continued, it would be absolutely necessary that they should supply their places by other means. As to the question of machinery, he should not enter into that, in the presence of his friend Mr. Mechi, who not only enlightened them by his speeches, but whom they always welcomed there with the greatest pleasure. Mr. Mechi would proably address them presently, and he was sure he would deliver his sentiments in that genial yet clear and concise style, which always afforded them so much pleasure.

Mr. J. J. Mechi said· With regard to the condition of British agriculture generally, which was a very large subject, he could only say it behoved them to endeavour to progress concurrently with the other great industrial occupations of the kingdom, and they knew this could only be done by the investment of a much larger capital, and certainly also by the investment of a considerable amount of intelligence. This of course implied that a great many old prejudices must be given up, and so far as his own personal position was concerned he confessed he was not surprised that some 20 years ago, when he dashed into agriculture with a number of mercantile principles imbued in his mind, he should have received a very large amount of opposition. It was now 18 years ago since he put up his first steam-engine, which he believed was the first fixed steam-engine in Essex; next he began draining stiff collapsing clays—not their hard chalky clays, but collapsing clays which he was told would swallow his pipes and everything else; and then he went into garden cultivation, cultivating deep—not bringing up the bad soil to the top, but after it had been stubbed up leaving it to the influence of the air, that great fructifier of all soil. Then again he did not see the benefit of hundreds of ugly pollards and large fences, which took up a deal of land, and stood in the way of the plough. Was he to be told now that any one of these things was useless or unprofitable? Certainly not. He saw they all agreed with hm, because they were now constantly practising them. He came to-day through a country where he saw a collection of pollards such as he believed did not now exist in the county, and he said to a friend with him, a practical man and once the steward of a large estate, "What is the value of those great ugly pollards, taking up such a space of land, and spreading their roots far into competition with the growing corn?" He replied, "They are not worth half-a-crown a-piece when they are cut down;" and he believed him, for he remembered selling many for a shilling a-piece when he cleared a farm for his own tenant. Timber was a landlord's prejudice; but he (Mr. Mechi) did not want to deprive the land of trees in their proper places. He liked a good plantation in its proper place, for it was a refuge to those small birds which were so useful to them, and without which their crops would be destroyed by insects. But he could not agree with a little four, five, six, or seven-acre field, where there were no end of gates for the landlord to keep in repair, and where the farmer could not plough the head-land on account of the trees, and yet had to pay rent for all these, including half the roadway round his land; for the tenant could not be expected to prosper with such a state of things, and it would thus also be more difficult for the landlord to get a fair rent for his land. When he told them he had pulled down almost every fence on his farm, and had now 132 acres without a fence, except a small one beside a ditch, would they not agree that he was in an advantageous position compared to those who were surrounded by small fields with very large fences? He was able in this way to make it pay, and it was a very difficult question, as they knew, now to make farming pay. He was on a farm to-day and was told by the occupier, a practical farmer, that he was doing very badly with the farm, for he paid a high rental, and had uncomfortable fences and small fields, and he was losing money by it every year. He named no names; but the spot was no, a hundred miles from that place. Before he left this pointt let him say that there was one thing which must be done in agriculture, if they wished to make it pay; and that was, that a larger capital than was now generally the case must be invested by both tenant and landlord. If he (Mr. Mechi) had made many valuable changes on his farm, it had not been done without a large expenditure of money; and if they would produce more corn and stock, they must invest more capital in the soil. He, with his modern ideas about farming, had come to the conclusion that, if they wanted to make a profit out of their farms, it must be by a very large addition to their live-stock. With deeper cultivation, which could only be attained by using more horses or steam-ploughs, he could not farm his land profitably under a tenant's capital of £14 per acre; but £16 would be better. The capital of the United Kingdom was not more than £4 per acre; and therefore there was room for vast improvement in this direction. There was one other point which their Chairman had already eloquently descanted on, and that was the increasing scarcity of labour. Labour was slipping away from them; and, while the men were paid better wages and were better fed in other parts, it would continue to slip away. Statistics showed that the number of people employed in connexion with agriculture remained stationary, or rather diminished; whereas in the manufacturing districts it was increasing from something like fifteen to eighteen or twenty per cent. This was very important to their interests as agriculturists; and it behoved them to see if they could not by some means retain the services of those men who were so necessary on their farms. Now came the question, What was to be done? and their chairman had very properly said that the supply of good cottages was the first consideration; and if they regarded the health of the labourers and their families, he (Mr. Mechi) should say, good water, secondly; and he was exceedingly pleased in going over the Maynard estate, to find a pump of pure water placed against every cottage. By neglecting the health of the labourer and his family, they would bring them on the parish-rates; and these would become, insidiously but certainly, a great tax on the farmer, who had to pay them. There was another means which he hoped many of them had adopted, for keeping their labourers at home; and that was, paying them by piece-work. He had a character, perhaps, among his agricultural friends, of being expensive; but he maintained, and he was prepared to prove, that the labour on his farm was done as cheaply as on any farm in the county of Essex. But he paid for everything by piece-work; and what was the result? They heard great complaints in the *Times* and other places of the low wages paid to agricultuaal labourers; but he rather thought that those complaints were sometimes grossly exaggerated, and though the weekly rate of wages was said to be 11s., his men earned on the average, taking all circumstances together, not far short of £40 a year, or 16s. a week. One great benefit of piece-work was having a large quantity of work done in a short space of time, while the men were also able to be better fed, and their physical condition was much improved; and they were able also to pay an extra shilling a week for a good cottage, instead of living in a tumble-down, rickety tenement. The result was, these men did them a full amount of work for their money; and their physical and moral condition were improved by their earning more wages, without any deterioration or loss to themselves. He spoke strongly on this point, because he knew that by these means they would secure the services of men of superior power and judgment, and able to do a large amount of work. They might depend upon such men, and he might mention that many of his own men had been with him twenty-two and twenty-three years, and had dug the foundations of his new buildings, dug his drains, and everything. They were strong young men when they came to him, and piece-work would always bring them strong, useful men; for men of that kind would of course go where they would have the opportunity of making the best of their own powers, of which they were conscious; and they might depend upon it that if they paid all their men alike they paid dearly for their labour. He had had no difficulty with his men excepting this year—when so many had experienced similar difficulties, and they then seemed to have the slightest possible idea that they were not so well paid as they might be. A very curious fact was stated the other day by Mr. Bright—he was not going into politics—about the ownership of land. He stated that the greater part of half the land, in England was owned by 162 persons, and half the land in Scotland by 10 or 12. That seemed a monstrous proposition; but he believed it was quite true. He was visiting some years ago a great agricultural duke in Scotland, and after he had driven him about with two pair of horses all day, he said to him, "Well, your grace, how much land have you in Scotland?" His reply was, "I don't quite know; but taking water, and waste, and moors, and so on, something about a million acres; but my neighbour has a great deal more than I have." That was independent of his estates in this country, and therefore he did not at all discredit the assertion that half the land in Scotland was held by 10 or 12 individuals. But he did not think there was any disadvantage in this, agriculturally speaking, for he was bound to say that this very nobleman was among the foremost in improvement, not only in Scotland, but in England, and he was surprised at the amount of energy which he displayed in regard to agricultural improvement. He said to him, "Mr. Mechi, I have taken a large slice of the Government loan for drainage, and if they would have allowed me I would have taken all the money they offered; but they would not let me have it." He (Mr. Mechi) might add, that he recollected that Scotchmen took the whole of the first Government loan for drainage, and the Englishmen who had let the opportunity slip took care that on the next loan a reserve should be made that only so much should go to Scotland, and a certain proportion to England. This only showed that their Scotch friends were somewhat sharper in the great matter of drainage than they were. The nobleman he had referred to was a most spirited and liberal landlord, and he said to him (Mr. Mechi) "My tenants beat me now." Now what a pleasant thing that was! He had heard of one large landlord who had improved his estate 25 per cent., and he only hoped the profits of the farming were such as to allow an equal per-centage of improvement on the farmers' part. He had the pleasure of knowing many people with large estates, and he was bound to say the greatest improvements were going on in those estates. Let them look, for instance, at the Duke of Bedford's estate. Every cottage there was a model one. His Grace gave long leases and valuations, and did not interfere politically with his tenants and the consequence was that he got a class of men on his farms who were able to invest a large amount of capital, and the estate became of greater value, and the country generally was benefited by the large extent of labour employed. For twenty-three years he had been talking about what some people called a nasty subject, but which he called a nice one, and he was glad to find that in that neighbourhood they had remedied their deficiencies in this respect, and the sewage of the town was applied to its proper object, the fertilization of the land; and at Bridgemarsh farm, only 16 miles off, 150 men with a 20-horse power engine were employed in merely making bricks for the new tunnel which was to come into Essex bringing the London sewage; and Mr. Offin, who was a large farmer, told him the tunnel would come through a mile and-a-half of his land, and he had made arrangements to take some, and possibly he should be a large consumer of the sewage from London. There was another point also, which he should like to mention. He heard that a great danger was likely to befall British manufactures and agriculture, and that to a great extent machinery and implements were likely to be rated. He understood that already a gentleman near that town, whose machinery was used for the purpose of manufacture, had been rated, and that the increase in charge was something like 200 per cent., and it was quite clear that if this held good as regarded the implements of manufacture, it would equally hold good as regarded the implements of agriculture, and perhaps even their scientific friends who used the scalpel would be assessed. In conclusion he could only thank them for the kindness with which they had listened to his remarks, and he would add that if he could do anything to forward agricultural improvement it would afford him the greatest possible pleasure. He believed himself that the most important work in England was filling the British stomach; and if they asked their manufacturing friends there whether they would go without coats or their dinners for a month, he was afraid the coats would suffer.

CENTRAL FARMERS' CLUB.

THINGS IN AMERICA.

The first monthly meeting of the Club, after the usual summer and autumnal recess, took place on Monday evening, November 5, at the Club-house, Salisbury-square, Mr. G. Smythies in the chair. The attendance was very large.

The **CHAIRMAN**, in opening the proceedings, said: All present who were members of the Club had no doubt received a letter from Mr. Corbet, stating that, owing to unforeseen circumstances, they could not have the discussion that evening which was proposed at the beginning of the year. Mr. Clarke, who was to have read a paper on steam cultivation, was so engaged in getting up that very question for the Royal Agricultural Society that he was not able to appear before them on that occasion. Of course they were, as farmers, very much disappointed that they could not have that paper; but he had no doubt that when it did come it would be all the better for the increased attention devoted to the subject. The notice that Mr. Clarke could not attend that night came during the recess, when there were no meetings of the committee. Thus it devolved altogether on Mr. Corbet to find a substitute for Mr. Clarke; and he thought they were very much indebted to that gentleman for having managed so well as to induce Mr. Howard to tell them something about what he had seen in America (cheers). He (the Chairman) was very glad to find that the state and prospects of their cousins over the water had created so much interest, and brought so many people together; and he had no doubt it would tend to cement the unity which he hoped would always exist between the two countries, when the Americans learnt what an interest was taken by farmers in subjects which concerned them. There was a great deal which they could learn from their brethren over the water, particularly at the present time, when, as farmers, they found such great and increasing difficulty in getting labourers. In America this want was felt long ago; and it compelled the people to turn their attention far more than we had done to machinery. That had been a positive necessity for them; and it would soon be a necessity for us. They would hear from Mr. Howard and other gentlemen present an account of the machines used in that country, which would, he trusted, prove of great use to them (cheers). The subject that evening differed so much from those generally introduced that he was afraid they would not have the usual farming discussion; but there were, he believed, several American gentlemen present, and the meeting would probably be very happy to hear them (cheers).

Mr. **JAMES HOWARD** prefaced his paper by observing that since he arrived in London he had been told that many persons expected to hear a great deal in the way of anecdote. Much had been said and written about America for amusement and far too much in a satirical strain; he had no doubt that he could amuse them with incidents; but he thought that in addressing the members of the Farmers' Club he should take a business view

(Hear, hear). He should be very sorry if any gentleman had taken the trouble to come there from a long distance in the hope of being amused: his object was rather to instruct (Hear, hear). Mr. Howard then proceeded to say: Some thirty years ago, when a boy at home, a well-known American, Dr. Fisk, was a guest of my father's. At night, it was a great treat to me to sit up and listen to his glowing descriptions of that great country across the Atlantic. I formed, at that time, a strong desire to go and see the land which, to my youthful mind, seemed to present so many attractions. The occupations, however, of a busy life prevented the realization of these aspirations. In the spring of this year, circumstances (no Royal Agricultural Society's show) seemed to favour the accomplishment of my long-cherished wish. I accordingly determined to go and see for myself a country which all the older countries of the world have begun to regard with so much interest. When I sailed across the Atlantic I had not the remotest idea of giving publicity to any account of my trip, much less of addressing this large and influential Club. However, as the Club was in a difficulty, caused by Mr. Algernon Clarke's inability to fulfil his engagement to read a paper on the subject of steam cultivation, I very reluctantly consented to fill the gap. I may, perhaps, be pardoned in making just one remark upon the subject which was on the card for discussion this evening. I am convinced that on both sides of the Atlantic it must ere long excite more interest than it does at present. Steam has slowly, but not less surely, superseded every other power with which it has been brought into competition; and I most thoroughly believe it will, before many years, be the chief motive-power employed in tillage operations throughout the civilized world.

Extent.—America is a country which must be seen to be understood. You may read volumes of books about a distant land, but a short visit will impress the mind more deeply, and afford more correct views than all the books you can collect. I had read much and heard much about America before going, but my mind was not impressed with anything like an adequate idea of its vast extent or its great resources. I went, I should remark, from New York through the State of New York, thence to Canada through Indiana, Ohio, and Illinois, to Iowa, beyond the Mississippi, and back through Illinois, Ohio, Pennsylvania to Washington, Virginia, and New Jersey, to New York again; thence to Newport and Boston, through the New England States to Saratoga, and once more to New York. The enclosed land of America—I allude to the States, I leave out Mexico, Canada, and the other territories—amounts to the enormous breadth of 400 millions of acres; the unenclosed, or uncultivated, to about a billion and a-half—figures which seem to dwarf Great Britain into a mere speck upon the map of the world. The area of the United States alone is bigger than the whole continent of Europe. Notwithstanding the vast extent of the territory indicated by these figures, the whole has been surveyed, and those portions which are likely to be settled within a reasonable time are mapped, divided into townships, subdivided into "squares," sections, and again into subsections. The roads and cross-roads are also laid out, and the widths determined. These several divisions are numbered and registered both in the office of the Surveyor-General at Washington, and in the Counties Register offices of the several States. No question, therefore, of title can arise, and land in American can be transferred as readily as Bank Stock.

The People.—I have said that America is a country which must be seen to be understood. I may say the same of its people. It is notorious how little the people of France and England, although such near neighbours, understand each other; but then they speak different languages; to me, however, it is passing strange, that people speaking the same language, reading each other's periodicals and literature; a people of the same race, descendants in the main of the same parent stock, should entertain such erroneous views respecting each other as do the Americans and English. It is difficult to say whether the Americans know less of the English or the English of the Americans; but I incline to the latter opinion, and for this reason: where you meet with one Englishman who has been to America you meet with ten Americans who have been to England. Again, it has been too much the fashion with our public writers to hold up the American people to ridicule, to represent them as rough, ill-mannered, boastful, unprincipled, with scarcely a redeeming feature. I cannot, of course, vouch for what they were in years gone by, nor can I say they are altogether free from the vices attributed to them. I do not maintain that in etiquette or personal manners they come quite up to the English standard, but any deficiency in this respect is more than compensated for by the absence of that stiffness and formality of the one class of English, and of the extreme servility of the other class. The Americans certainly can "brag;" but then, as J. A. Wright, a large Pennsylvanian ironmaster, whom I twitted with this propensity, replied, "Yes, we acknowledge it;" adding, "you will remember we inherit it from you." If asked the question, I should be obliged to confess they have shot far a-head of the old country in the art of boasting. But, to speak seriously, I do believe the American people have been misrepresented and traduced by some of our public writers, in a way that no other people on the face of the earth have been. Three of England's leading commercial men, who, after having visited America, have published to the world their ideas of America and its people—I allude to Mr. Whitworth, of Manchester, an engineer of the highest celebrity, and subsequently more widely known by his improvements in guns; Mr. Chambers, the great publisher of Edinburgh; and lastly Sir Morton Peto—these gentlemen, in my opinion, have in their books done not only much to enlighten us upon things in America, but they have done justice to the American people. Our professional writers have done them as great injustice. I went to America with a good many of the prejudices of Englishmen, expecting to find at least the bulk of the people rough, "rowdy," uncouth, and vulgar. Dickens and other professional writers might have met with the characters they have pourtrayed. I can only speak of the people as I found them. I travelled some 5,000 miles without once being subject to insult or rudeness of any kind. I mixed with all classes—for there are no first—second and third class on their railways or steam-boats, and I met with nothing but civility and politeness. The working classes are well-behaved, and, as a rule, are better educated and more intelligent than our own. The wealthier classes I found to be communicative, openhearted, and hospitable; indeed, as pleasant and agreeable a people as I could wish to mix with. I could give you many instances of what we know as "good breeding," but as it would be foreign to the objects of this Club, I forbear. I will, however, mention one circumstance. At Pittsburg I went to the Bank with my letter of credit, which I handed to a clerk, to draw some "greenbacks." A grey-headed gentleman, evidently one of the principals, came up, and "guessed I was a stranger in their city." I said, "Yes, I was from England." He asked whether he could be of assistance, in giving me letters of introduction to the manufacturers. I thanked him, telling him to whom I had letters of introduction; finding I was in good hands, he said how pleased he should have been to have facilitated the objects of my visit. This is one instance among many, of people upon whom I had not the slightest claim, giving themselves trouble to make my visit pleasant and agreeable. I went to a large number of manufactories in various branches, at all of which I was received with the utmost politeness, and shown the various processes without the least reserve.

American Agriculture.—I must now direct your attention to the real business of this evening's meeting, namely, the agriculture of America. America has been styled the granary of Europe; it is, doubtless, the largest corn-growing country in the world. It is mainly upon its agriculture that the progress of the country depends; its manufactures are *comparatively* unimportant, as from three-fourths to seven-eighths of the population are engaged in agricultural pursuits. Although we may learn a good deal on various subjects from our go-a-head kinsmen in the art and practice of agriculture, the old country is in the position of *teacher*. As might be expected in a comparatively new country, the agriculture, as a rule, is rough, and far behind that of England. That the farming should not have the neat and finished appearance which it presents in England and Scotland is not to be wondered at, when the dearness and scarcity of labour are considered, and when it is remembered how large a number of the cultivators of the soil were not brought up to the business of farming. A very large proportion of the farms in the older states have been reclaimed from the primeval forest: for hundreds upon hundreds of miles the stumps of the larger trees still remain in the fields, so that the date of the settlement of the locality can be calculated by the number of the stumps remaining. In the rocky and stony districts the stones still remain piled in heaps, the plough and the reaping machine having to thread their way between these stumps and heaps of stones. The system pursued in clearing the land of timber is as follows: In the fall or autumn the underwood is cut and piled. In the winter the trees are felled on to or toward the stacks of underwood, which are then set on fire. After this, the small stumps are extracted by a crab, worked by oxen or horses: the larger stumps are left to rot. The ground is then ploughed, or, as we should think, *scratched* over. Two or three crops of Indian corn are taken, in order to get rid of the second growth of underwood; when it is left in grass until the larger stumps are sufficiently decayed to be extracted. The grass of America has nowhere the splendid, rich green of our English pastures. Whether this arises wholly from the climate, I have some doubt. I think want of care in preparing the land, selection of seed, and subsequent stocking have something to do with the miserable condition and appearance of the American pastures. If sheep are depastured on young permanent grasses, a good pasture must not be expected, even in our more humid climate. After having travelled for weeks through this old forest-land, with its blackened stumps and zigzag rail-fences (or "snake-fences," as they are called), to get a view of those grand, open prairie-lands is a relief scarcely to be described. In the wooded district the toil of clearing and bringing the land into cultivation is immense. On the prairies the settler has no such labour; he has simply' to plough up the ground and sow the seed. The prairie lands are of three kinds—flat, something like our fens, and about as inviting districts to live in, without in many parts a tree or a shrub as far as the eye can reach. Then there are the rolling prairies—having a slight undulating surface and some wood—far less monotonous than the flat, but not, to those who have an eye to. beauty, so inviting as the high rolling prairies. The most beautiful country for farming I saw in America was in Iowa, across the Mississippi; indeed, it is one of the most picturesque countries I have ever looked upon. Fine land in this State is to be purchased at less than it would let for in England; but more on the price of land presently. This fine State contains fifty millions of acres, only eight millions of which are at present under cultivation. The system generally pursued in American farming is one of exhaustion. The evils of this practice are beginning to be felt in the older-settled States in the gradually and steadily diminishing yield. There can be no doubt that the evils of such a course will be much more generally and seriously felt unless a change of system be adopted. Rotation is little observed. Root crops, except potatoes, are rarely seen. Crop after crop of corn is taken from the soil without anything in the shape of fertilizers being returned. The bones of the country are either thrown away, or, when collected, are exported. So also of the linseed and cotton cake—as there is very little native demand, they are exported to Europe. The use of manures and feeding stuffs is practised by a few, but they are quite the exception. An old farmer on the banks of the Wabash, in Indiana, told me he had grown grain crops—generally Indian corn—for thirty-five years in succession, with scarcely a dressing of manure, and that the last crop of Indian corn had yielded no less than 80 bushels an acre. This land, as you may suppose, is remarkably rich; but, as a shrewd Quaker farmer from Ohio, who joined us about an hour after, remarked, such a course was too common, but that it must come to an end—that he had cleared no less than 600 acres of land himself, had brought up a large family and settled them in farms, and had found it most profitable to keep plenty of stock, to observe a proper rotation, and to deal with the soil liberally. The farms are mostly small—averaging about 100 acres. In the Western country they are larger, many being 500 to 1,000 acres. One gentleman, Mr. Sullivant, in Illinois, who invited me to go and see him, farms 70,000 acres, and does it systematically and well. A large proportion of the cultivators are what may be described as working-farmers—men of rough exterior; but, owing to the admirable public-school system, they are generally fairly educated. The immense circulation of most of the agricultural journals is a proof that they are a reading people. The *New York Tribune* issues a weekly number, in which prominence is given to agricultural matters. The issue I found to be over 200,000; the *American Agriculturist* issues 150,000. *The Prarie Farmer*, *The Country Gentleman*, have also a large circulation. The larger and more opulent farmers are very genlemanly and intelligent men; know well what is going on in England—I thought, sometimes, better than some English farmers. There is another, and this a large, class in America—I mean amateur farmers. Doctors, lawyers, bankers, merchants, manufacturers—all seem possessed with the same love for farming so general on this side. I met with many of this class—for the acquisition of land is so easy—I found, however, that they told the same tale amateur farmers do on this side—viz., that farming was a very pleasant occupation, but that it did not pay. The wheat and other cereal crops are much shorter and lighter than we grow in England—I should say fully one-third less, 30 bushels wheat being considered a good crop. Indian corn yields far more—100 bushels an acre are occasionally raised; but 50 to 60 bushels is considered a fair crop. It is highly prized, is often cut green for fodder, and attains a height of 12 feet. The feed in an acre is something wonderful. It is given to all kinds of stock. I find my own farm-horses do well upon the grain.

Agricultural Machinery.—The tillage of the land is so mixed up with the question of the implements used, that what little I have to say will be under the head of "Agricultural Machinery." In England, as you are all aware, an enormous demand has set in during the last twenty years for improved agricultural implements. This has mainly arisen from a more correct appreciation of the value and advantages of good machines. In America, owing to the high rate of wages and the difficulty of obtaining an adequate supply of labour, agricultural machinery calculated to save manual labour has been an absolute *necessity*. Without the reaping machine the crops could not be harvested, and without the thrashing machine they could not be brought to market. Hence the trade in agricultural implements has reached gigantic proportions. From inquiries I made I found that at least 100,000 reaping and mowing machines are made annually in the States. I was there during the harvest—everywhere the reaper was to be seen going; the scythe or the sickle was just as exceptional as the reaping machine was in England ten years ago. The thrashing machines were very inferior to ours, though the Americans were very apt to think they were far ahead of us, and that we were a very slow people; their machines were almost exclusively worked by horse-power. One farmer on the banks of Lake Ontario, who had ten horses yoked to his thrashing machine, seemed much surprised that in England we did all our thrashing by steam power. He had never heard of such a thing. The implements of the farm, if we except reapers, are of very inferior design and build to our English machines. I thought one great want in American farming was good steerage drills and horse-hoes to follow. In a country where labour is so scarce and dear, the hoeing of the corn crop by animal power would be an immense boon. The drills are not made with a steerage; consequently, the drilling is bad, rendering the use of the horse-hoe impracticable; and, as labour is so dear, in most cases the corn and the weeds seem to be left "to grow together until the harvest." To a farmer in the north of New York State, on whose land I went to see some reaping machines at work, and whose barley was full of thistles, I said, "If that crop had been in England, we should have cut out the thistles." He replied it would not pay, adding he did not mind thistles, for he always had a good crop of wheat after. Nearly the whole of the implements are furnished with a seat for the men to ride—the idea being to get more work out of the labourers. I found the prairie farmers very desirous of having a good "gang-plough," as it is called, on which the ploughman could ride. I told them if the men had easier work, it would be at the expense of the horses. As reaping machines are used, and in consequence open furrows undesirable, the land is frequently ploughed as follows: A short ridge is set in the middle of the field, the plough passing not only up and down each side, but a furrow is taken off in going round at each end. By this means the plough is always in the ground, and the whole field ploughed without leaving an open furrow. A field may also be commenced by ploughing a furrow all round the outside, and finishing in the middle. The American farmer is not satisfied, as we are, with one team ploughing an acre per day; but expects from each team of a pair of horses two acres to two and a-half acres. I rather doubted so much being done; but was over and over assured by both masters and men that two *acres* and a-half were not at all an unusual day's work. The furrows, I must tell you, are over a foot wide—none of your fancy ploughing-match style. The land is also generally much lighter than our English soils, and the depth of the ploughing is, according to my notions, very much too shallow—a fault not at all uncommon on this side the Atlantic. Steam ploughs have not yet been introduced. Several attempts have been made; but as all the schemes have been with engines to travel over the surface—after Romaine's plan—no wonder they have not succeeded. On the prairies there would be no difficulty in constructing machinery capable of breaking up twenty or even twenty-five acres of such land per day, and this with only three men. Where labour is so scarce, and time such an object, the advantage of the steam plough would be immense. In Iowa I saw a very simple and efficient apparatus called a "horse pitchfork" for raising crops on to the stack, a horse simply drawing the load over a pulley. I also saw a hay-loader attached to the rear of a waggon, and which gathered up and elevated the crop on to the vehicle, thereby saving much manual labour.

Live Stock.—Although the territory of the United States is so much greater than England, the live stock is by no means in the same proportion. The cows and other horned cattle, according to the census of 1860, amounted to about 17 million, about double the estimated number of the United Kingdom—2½ millions of the cattle were returned as working oxen. The sheep, on the other hand fell short of the estimated English number by 2½ millions; whilst the pigs exceeded by ten times our number, reaching the fabulous number of 33 millions, or just about as many pigs as people. The bulk of the cattle I saw were of the shorthorn type. Alderneys and

Ayrshires are much in repute for dairy purposes; but, as in England, the shorthorn is the prevailing breed. The sheep of America are of a very nondescript character, generally miserably bred and ill-looking things, about half the size of the English. Flocks of Leicesters, Southdowns, and merinoes are to be found; but they are exceptional. There is one matter—an important one to an Englishman—viz., the quality of the meat. Whether it be the climate, the food, or the cooking, or all three, I don't know; but the beef and mutton are most inferior, tasteless, and tough in the extreme. Pork is tolerably good. The national importance of paying more attention to sheep is being urged upon the American farmer by the daily as well as by the agricultural press, an increase in the supply of wool being deemed an absolute necessity, five millions sterling having been paid to England for woollen goods in 1865. The draught-horses used in America are much smaller—very different from our English type. They are well-bred, clean-legged, and active. The "Kentucky thorough-bred," as it is called, is the favourite breed. I saw an entire horse of this breed upon the farm of Mr. Emery Cobb at Kankakee, in Illinois; he was made, as our Secretary would say, "all over like a hunter." I could have picked out of Mr. Cobb's team a good many "weight carriers," which would fetch fancy prices at Tattersall's. I did not see in the whole of my travels what I call a good stout draught-horse, such as I win the prizes with in my own county. At the railway stations in Philadelphia and elsewhere are to be seen horses of the cart breed, "raised," as I was informed, in Ohio and Pennsylvania. When the Americans grow bigger crops, as I am sure they might do, they will want bigger horses in their reaping machines; and when they stir their land deeper, which I am sure they ought to do, they will, if they do not adopt steam, require horses of greater weight. In some districts I visited, horses are shod with malleable cast-iron shoes, which are fastened without the use of nails. They simply clip the foot, and are secured by rivets. I have a specimen on the table, which I intend to try. Dairying is an important branch of rural economy in America. A very novel feature is the introduction of the factory system. In Oneida Co., N. Y. S., there are about 40 cheese manufactories, or "Associated Dairies" as they are called, having 16,000 cows. I have only time to glance at this subject. The advantages claimed are that the farmer's family is relieved of a good deal of drudgery—that by the employment of a skilful superintendent a more uniform and better quality at less cost is obtained, and, of course, higher prices realized. Messrs. Moore, cheese merchants in Buffalo, told me that for two or three years past their shipments of factory cheese had commanded the highest prices in the Liverpool market. Three of the cities of America most interesting as agricultural centres are, undoubtedly, Buffalo, Chicago, and Cincinnati. Buffalo is situated at the eastern extremity of Lake Erie. In this city, remarkable for many things, grain elevators have been erected to facilitate the rapid discharge of cargoes. Upwards of twenty of these gigantic automatic labourers have been built, which are capable of unloading vessels at the rate of 100,000 bushels per hour, and also of storing about five million bushels in their capacious chambers. Watson's elevator, which I ascended, stands 260 feet above the water, worked, of course, by steam-power. Four vessels can be brought alongside it, their cargoes taken out and transhipped or stored simultaneously. By this promptitude, a whole fleet of ships has not only been cleared, but has left the port within 36 hours of its arrival. Cincinnati I did not visit, owing to the prevalence of cholera, but notwithstanding the presence of this dire enemy in Chicago, I did venture to spend several days in that most wonderful of all the American cities. Thirty years ago this place was a mere village. So recently as 1840 the population was less than five thousand; now it numbers over a quarter of a million. I will not take up your time with a description of its splendid streets and public buildings, its 120 churches, nor its rising manufactories, for one might write a book upon this extraordinary city. It is at Chicago that the mind first becomes impressed with the vastness of the territory which lies beyond the Ohio, Mississippi, and Wisconsin—a country which, whether for area, productions, resources, or people, is becoming the noblest and grandest part of the republic. I will not weary you with statistics of the trade of Chicago in agricultural produce. Suffice it to say that upwards of 50 million bushels of corn are annually exported—that 1,400,000 pigs and 90,000 cattle are annually slaughtered in this western metropolis. The great slaughtering establishments of Chicago, the elevators, and corn stores, are as perfect in their way as any of our Lancashire factories; but I have no time to dwell upon them. One of the most prominent agricultural features is the Chicago Cattle Market; 345 acres have been laid out; in the centre an ample railway station built, into which nine great railway companies run their trains; fifteen miles of sidings or branches have been laid down, water supply laid on, corn and hay barns erected; a great hotel, a bank, and an Exchange have been built; in fact, every sort of convenience and accommodation for both man and beast have been well considered and provided for at this great cattle mart of the West.

Agricultural Meetings.—Soon after my arrival at New York I heard of a great trial of reaping and mowing machines by the New York State Agricultural Society at Auburn, to which I at once set out. No less than sixty machines were exhibited for the prizes offered, the Government of the State having liberally voted the necessary sum to cover the expenses of the trials. These trials were conducted in a very different style to those which prevail in England. In the first place, three weeks were set apart for the purpose of testing the machines on various crops, and under varying circumstances. A long list of instructions to the judges, directing their attention to the various points deemed essential, drawn up by a committee of makers and farmers, had been prepared and printed. The jury consisted of the old English number of twelve, with a president, a secretary, and a chief marshal. These judges were subdivided into committees, some to decide on mechanical arrangements; others, on the quality of the work performed. Then there was the "time committee," "the dynamometer committee," and "the committee of description." After the trials were over, the jury remained at Auburn two or three days to draw up their report, and a second and final meeting to settle the awards was fixed to be held at New York on Sept. 1st, the prizes being subsequently declared at a meeting held at the New York State Fair at Saratoga on September 13th. The pains taken in preparing the points to which the attention of the judges should be directed, the various modes in which the machines were to be tested, the subdivision of the jury, the length of time devoted to the purpose, and the careful report, containing a record of facts rather than of opinions, seemed to me to be a long way in advance of our English mode of conducting such trials. One of the exhibitors said to me that the great use of these trials was that the experience gained, and the careful record of every fact elicited, were a means of teaching manufacturers their own deficiencies. This cannot be accomplished by a society unless the same care and time be taken as is the practice on the other side of the Atlantic. I was so struck with the careful preparation of the points to which the attention of the judges was directed, and with the whole arrangement, that I at once wrote to Mr. Hall Dare upon it, and I hope the implement committee of the R.A.S.E. will make some inquiry into the plans I have alluded to. We had a good deal of discussion at Auburn as to which country the invention of the reaping machine really belonged. Of course, the Americans claim the honour. Our countrymen across the Border dispute the claim, maintaining that to Scotland the merit is due. Now, if it be a question simply of priority of invention, neither is right; I must put in a claim for England: the inventor of the *main* elements of the reaping machine was a Bedfordshire man, Mr. Salmon, of Woburn. In 1807 he patented the principle of the reciprocating action of the knife, without which none of our reapers would be of the least use. He also invented the finger guards and the dividing appliance, and, more still, he made his machine with a self-acting rake to deliver the corn at the side in sheaf. Notwithstanding, however, these prior—English and Scotch—inventions, it is undoubtedly to America that we are indebted for the reaping machine in its present practical form—indeed for a machine that can be worked economically. In America such a machine was a *necessity* years before any need of its assistance was felt in England, owing in the one case to a superabundance and the other to a scarcity of labour. I met with one circumstance which reflects so much honour upon the class of agricultural machine-makers in the States, that I cannot forbear mentioning it. Two large rival manufactories stand on opposite sides of a street, belonging to two different men. The one is a sharp man, of good commercial knowledge; the other is a clever mechanic as well as a superior-minded man. The former had made money; the other had, notwithstanding his immense business, got into difficulties. His rival across the road, on hearing it, generously came forward and advanced some thousands of pounds to carry him through his difficulties. I think that a circumstance which reflects credit not only on the individual, but on the country which produces such a man. I found the American manufacturers not only intelligent, but a high-minded class of men. There appeared to be an absence of that narrowness of feeling too often observable among rivals in trade. Perhaps the breadth of country has something to do with the breadth of their views. I was struck with one arrangement which exists in America. Owing to the number of patents, the leading builders of reaping machines some years ago found themselves constantly in collision with patentees and each other. To obviate this serious difficulty a number of the principal makers and patentees united, and made a common stock of their own and a number of other patents which they bought up. W. Allen, Esq., of Auburn, was appointed their attorney and agent. Under this arrangement the maker can have the use of any or all of the patents, but he only pays a royalty upon such portion as he may choose to use. Although such a combination may look something like a monopoly, it is not so in reality. At all events it is in this case directly in the interest of the farmer, inasmuch as he is not the victim of the dog-in-the-manger practice; and as the patentee or man who may bring out anything good is not shut out, it is also advantageous to him, as he can join and avail himself of the general stock of inventions. In this arrangement I am inclined to think exists the nucleus of a reform in our own Patent Laws. At Saratoga I had an opportunity of seeing one of their great State fairs, as they are termed. Here I found a grand array of agricultural machinery, particularly of reaping and mowing machines. Large sheds were also erected in another part of the ground for the display of domestic wares and machines, such as cooking stoves, carpet sweepers, potato parers, and dairy utensils. This department was the chief centre of attraction to crowds of ladies. Other sheds were devoted to horticultural products and appliances, and the separation of agricultural implements from these other branches greatly facilitated the object of the visitor who wished to see and examine the agricultural machinery. At our Royal Agricultural Meetings, owing to the mixture of agricultural, horticultural, and domestic wares, I have found it impossible to make a thorough examination of the agricultural machinery. I think the Royal Agricultural Society of England would do well to turn its attention to this subject, for I hold that these agricultural gatherings are not only marts, but great educational institutions, and every facility should be given for the acquisition of knowledge; at least it ought not to be rendered as difficult as possible. There is one feature about the agricultural meetings of America which our meetings in England are too generally assuming—namely, they are degenerating into mere gala days, instead of sober business meetings. The trotting races at Saratoga, which took place on the show ground, were well supported and absorbed much attention, whilst on the ploughing ground not a single candidate put in an appearance, although liberal prizes were offered, so little interest was felt in this practical part of an agricultural meeting. I found the American people at their agricultural meetings, as elsewhere, polite to strangers. I paid for admission like any other visitor; but as soon as the secretary heard that I was upon the ground, he came to me with a handsome rosette with the word "guest" upon it, regretting that he had not known of my visit earlier. The exhibitors, both of machinery and live stock, were also equally polite, taking great pains to explain to me the merits of their machinery and the points of their animals. I should take up too much time to speak of their show animals. The superiority of their Shorthorns is notorious. Singularly enough the first prize Shorthorn bull at Saratoga I found was got by my brother's bull, the 2nd Duke of Thorndale, a bull my brother imported from America, and bred by Mr. Thorne, Dutchess County. The climate evidently suits our English breeds—the Alderneys or Jerseys, the Ayrshire, the Devon, and the Hereford, all seem to thrive, and have their respective champions; but the Shorthorn, as here, has the lion's share.

Schools.—The public schools are so prominent and distinguishing a feature in America that I cannot pass this subject over without a few words. Whilst religion has been allowed, as I think wisely, to take care of itself, education has been fostered and endowed. The value set upon it by all classes throughout America—and Canada too—is something we have no idea of at home: it is not compulsory, but it is enforced by public opinion, so strong as to be found more stringent than any law. Take a drive into the country, and every two or three miles you pass, in places often apparently without a population, neat and commodious school buildings, whilst in the cities large schools confront you in almost every street. The plan of supporting these public schools varies in the different States. In most, certain portions of land are set apart, the revenues from which are devoted to the education of the people. In the older settled States the schools are supported by a rate based upon the valuation of property or business-income of the district. In the New States the Government has in the settlement invariably set apart a certain portion of the land for this object. Formerly 1-36th of all the land in the State was thus set apart; but such importance is attached to this question of education, that Congress has latterly increased the school lands to 1-18th. The affairs of the schools are under the direction of committees chosen by the people. I was assured that the religious differences of the people were not found to be a disturbing element; that the Bible was the only religious book used; that prayer was offered daily, both at the opening and close; and that no other special religious teaching was attempted. The absence of a dominant church, and the fact of the Government being in possession of such vast tracts of land, have rendered the dealing with this great question comparatively easy. The people of England will never be educated as they ought to be, without Government passes some more comprehensive scheme than we have at present. Let me ask you not to go away with the idea that religion is not cared for, or that nothing is done to provide for the religious wants of the people. The extent of church accommodation is everywhere far in advance of that in this country, notwithstanding the existence of our richly-endowed establishment.

Conclusions.—The advantages which America offers are so great, that, when you consider the prospects present and future to themselves and their families, the wonder to me is that so few are willing to make a present sacrifice: that so many remain in the Old Country is most marvellous to one who has paid a visit to the New. Here we are so over-populated, that thousands of young men above the working classes are unable to obtain suitable and remunerative employment, or to embark in business with any fair prospect of success. Farmers and their sons find it equally difficult to settle. The consequence is, that rents in this country have been forced up to an artificial standard. What with an increase rental, the higher rate of wages, a lower standard of prices, the greater risk from disease in stock, and undiminished taxation, I cannot see how the present race of farmers, except a few favourably-situated, can hope so to increase their capital as to become possessed of the means of settling their families in respectability. If we could add a Lincolnshire or a Norfolk every year to this little island, the whole position of things would be changed: there would be room for everybody. It is just this power of expansion that makes all the difference between America and England. One fact will throw some light on this part of my subject. If the United States were as thickly populated as England and Wales, the population would amount to the enormous number of 924 millions. From the natural resources of America, from its varied soil and climate, its boundless beds of coal and iron, which are in proportion to its breadth of territory, it would be as capable of supporting this immense population as is England of supporting its present number of inhabitants. Among the advantages offered by America to the agriculturist, the low price of land is unquestionably the greatest. Splendid land can be purchased in the newly-settled States at the low rate of two dollars an acre. I believe if bought direct from the Government the price is only a dollar-and-a-quarter. Of course, as the districts increase in population, the price of land goes up, so that on the banks of the Hudson and about Philadelphia I found land as dear as in England; whilst close to Dubuke, in Iowa, the finest land was not more than £5 per acre. By the "Homestead Law," every head of a family who desires to settle in America, and become a naturalized subject of the United States, receives from the Government 160 acres of land, substantially as a free-gift. Each of his sons, too, on coming of age has the same advantage. Surely, such munificence is enough to tempt some of our struggling industrious, but over-weighted farmers to cross the Atlantic in search of a country where there is so much more room for their energy. The American farmer has no rent day to haunt him; he pays neither tithe nor church-rate; the poor-rate is a bagatelle, and there being no game-laws, there is no fear of being eaten up. "But how about wages?" some one will ask. Well, they are high, and that is about the only drawback I know—twenty dollars a month and board, or about a dollar and a-half a day without board. The men work long hours, and the amount expended in labour per acre, notwithstanding the high rate, is not greater than in England. Another advantage the American farmer possesses is, that his horses cost him less to keep. We say, "Idle horses eat their heads off:" over there, when not wanted, they are turned off to grass, to grow into money. Again: Very little of the hindrance and loss we have to contend with through rainy and uncertain climate are known. I have said I only know one drawback which the American farmer has to encounter, viz., wages. There is another I had well nigh forgotten: An English farmer, should he desire to purchase an American machine, does not have to pay a shilling duty upon it; not so with the American; should he wish to buy an English machine he would have to pay a tax upon it of twenty-five per cent. Just for the advantage of a few wealthy manufacturers, who, be it observed, are an infinitesimal portion of the community, that great country allows itself to be taxed on its iron, on its machinery, on its clothing, and in a hundred other oppressive ways. When the agricultural and consuming classes once turn their attention to this subject of Protection to the manufacturer, those duties, I do not question, will go with one fell swoop: at present public attention is distracted by the great political difficulties of the country. In Canada the rate of wages is lower, being only half-a-dollar per day, and a dollar in harvest, without beer. As they are paid in gold instead of *green-backs* the difference is not so great as it appears. I found it was more common to hire land in Canada than in the States. Some very fine land near Toronto, about 12 miles in the interior, was let at 12s. per acre. The tenant, an Englishman, seemed well satisfied with the change he had made. Barley fit for malting is grown here, and exported at good prices to the large brewers in the States. Canada to the farmer offers a fine field, but to the trader or manufacturer it is not to be compared with the States. If I were to be asked what is the best part of the States to settle in? I should say one of the North-western States—Illinois, Minnesota, Iowa, Wisconsin, or Michigan would be the best for corn growing and stock raising. I incline, however, to think that more money is to be made out of the vine and cotton, and that there is a fine field open in North Carolina, Texas, and California. Plenty of land is to be had in North Carolina at 20 to 25 dollars an acre, which will produce a bale of cotton per acre. I should, however, recommend any one going out to America not to be in too much of a hurry about settling down. Travelling there is cheap: the fare from Boston to Chicago, a distance of 1,200 miles, is only 27 dollars, less than £4 in our money. In England we cannot be too near a railway: in America, out West especially, the farms immediately adjoining a railway are avoided, owing to the losses through the cattle getting killed by the passing trains, from the lines not being fenced in. I could say much more on this head, but must draw my remarks to a conclusion. Although a better feeling is springing up than prevailed during the war, there is not that cordiality between the two countries which should exist between two such communities. America is our natural, and ought to be our firmest ally: as we begin to know and understand each other better, let us hope that on both sides of the ocean there will be an absence both of acts and words calculated to provoke or keep up irritation or ill feeling. There have been undoubtedly faults on both sides; 'tis to be hoped that the present Government will do all that can honourably be done to bring about a better understanding, and that without delay. In conclusion I would remark that when a man has visited England and America he has seen the two most wonderful countries the sun has ever shone upon. Never before, in the history of the world, were there ever gathered together upon so small an area such numbers, so much wealth, such a development of industrial enterprise, so well governed, and such a practical and common-sense people as are to be found in Old England. On the other hand, never before, in the history of the world, has there been anything like the rapid growth of America: so vast a territory, peopled so quickly, its resources developed so speedily, its institutions so completely and well organized, and such progress made in the industrial arts. In America, you find everywhere the same activity, the same reliant enterprise as at home. These traits of character are undoubtedly somewhat intensified by the circumstances and perhaps the climate of that country. When I witnessed the large amount of social prosperity throughout the States, resulting from these qualities, instead of feeling anything like national jealousy at the wonderful results everywhere visible, I was impressed more fully with the causes of the true greatness of my own country. I felt proud in the remembrance that America was the offspring of England; that the old country had been reproduced on so grand a scale in the new; that the character of the parent stock was so stamped upon and so apparent in the vigorous growth of its off-shoots: not only the blood, but the ideas, the laws, the religion of England exist and flourish in the United States. The Anglo-Saxon race on American soil is asserting its supremacy on a gigantic scale, as well as with characteristic energy and vigour. One very remarkable phenomenon is, that notwithstanding the immense number of immigrants from the other nations of Europe, the English type of humanity is everywhere predominant. Like its own great river, the Mississippi, which receives numbers of tributary streams that are blended with and become one great current; so with all the races which flock to America: they feel the force of, and become blended with the grand current of Anglo-American life. In a generation or two the French, the Dutch, the German, and the Celt, lose everything of their foreign distinctness, and nothing is left of their national character but the name. The language, the ideas, the freedom, the enterprise, and what was so thoroughly exemplified during the late deplorable war, the courage, the pluck of England—all live in America, and seem to be uniting to form the greatest and most powerful empire the world has ever seen.

Mr. JAMES THOMAS was sure he expressed the sentiments of every one present when he said that they had listened with the greatest pleasure to one of the most instructive and interesting papers delivered since the formation of the Club (cheers). He wished, however, to make an inquiry of Mr. Howard on a rather important point. They all knew that in Lincolnshire, Leicestershire, Yorkshire, Northumberland, and some other counties, there were first-class farmers employing a capital of fifteen or twenty thousand pounds in the cultivation of land. They also knew that the average profits of English farming during the last forty years could not be estimated at much above 10 per cent.; and he would ask Mr. Howard whether he would recommend a farmer with such a capital, having three or four sons whom he could not hope to place in a similar position to his own in this country to give them five or six thousand pounds and send them to the United States?

The Rev. E. SMYTHIES (Hathern Rectory, Loughborough) wished first to express his great obligations to Mr. Howard for the interesting, practical, and thoroughly business-like paper which he had read. The question had, as he anticipated, resolved itself into this: What was the best country for any young farmer, a cadet of a family of five or six sons, who felt that there was little chance for him in England—what was the best country for him to go to, whether in our own colonies or in any other part of the world, in order to obtain a prospect of filling a position something like that of his father? Now, though Mr. Howard had, as regarded many important points, drawn a very attractive picture of the advantages presented in the United States—and no doubt cheapness of land, and the large production there compared with the outlay, were very attractive features to all who were practically acquainted with agriculture in this country—still, in dealing with "Things in America," he (Mr. Smythies) might perhaps be allowed to treat the subject in a somewhat larger point of view. And here he would venture to throw out, for the consideration of the committee of the Club, whether it would not be a very useful question for discussion next year, what was the best country a young farmer could go to from England? There must be many members of that Club who had sons whom they could not place in a similar position to their own; and to all such persons it was an interesting question, to what country a youth having a certain amount of capital could go, in order to try his fortune? On that point he happened to have some reliable practical information. Admitting all that Mr. Howard had so well said respecting the advantages of the United States, he would observe that there were lands in South America—which was, of course, included in the words "Things in America"—which presented even a better prospect to the young farmer. There would always be a prejudice on the part of a young Englishman who emigrated, in favour of the laws and constitution of his own country; and that state of things which was the nearest approach to the laws with regard to the tenure of land in the old country would be most attractive to him, when seeking for a land in which to obtain his future livelihood. He happened to know that there were portions of South America—he now referred especially to the Argentine Republic, a very large territory—where great advantages were offered to young farmers. Having received, three weeks ago, a letter from a dear boy of his own, who had become a settler in that part of South America, he would read an extract from it. His son said: "I have now been just six months and a fortnight in this country"—that was, on the banks of the great river La Plata, or rather of its feeder, the Parana, the farm being about five hundred miles north of Buenos Ayres—"and already I can truly say that my hopes have been fulfilled beyond my most sanguine expectations. If we have only common luck, we shall make good fortunes in a few years. It is a poor year, in this country, which does not return thirty per cent. on your outlay." In confirmation of that, he (the Rev. E. Smythies) might mention that he knew that large sums of money were lent by banks in South America, for sheep-farming, at the rate of 2 per cent. per month, or 24 per cent. per annum; and if farmers could afford to pay twenty-four per cent., it might fairly be concluded that they made thirty. As regarded climate and other things affecting health, his son said: "I have enjoyed most perfect health in this country; I have been quite free from the coughs and colds which I constantly suffered from in foggy England." He mentioned this to show that there were parts of America but little known, where a small capital would go a long way. Mr. Thomas spoke of a farmer's giving his son £5,000. Well, he presumed that, if they could give their sons £5,000 apiece, they would not wish them to go a long way off for a living (Hear, hear). He would just mention two or three figures that might be relied upon, connected with the case to which he had just alluded. In the case to which he alluded—and there were many others of the same kind—the parties had obtained the fee-simple, the tenure being equal to that by which any gentleman in England held his estate, of about 14,000 acres of splendid land; and upon that land there were at this moment above six thousand sheep, five or six hundred head of cattle, and about two hundred and fifty horses. The whole of this property, together with a large amount of preliminary outlay in making sheepfolds, fences, and other things of that kind, was obtained for an outlay of £2,800—a much smaller outlay than was mentioned by Mr. Thomas. If a young farmer thought of going to Australia or to New Zealand, and made inquiries on the subject, he was perhaps met with the answer, "You may do very well, if you have eight or ten thousand pounds." If a farmer could give his sons such a sum as that, they could do very well here; but the question was, what they could do with a thousand pounds? and in South America there was an abundance of land where an enterprising young man might obtain all that could be reasonably desired with that small capital. In the very last letter which he received there were these words: "We are perfectly well and happy; we have plenty to do; and what more can we wish?" That was a sensible conclusion, and one which must commend itself to the mind of every farmer in this country (cheers).

Mr. G. P. Tuxford (Strand, London) said he believed he might take credit for being one of the oldest members of that Club, and at the same time for not having obtruded on the Club any observations of his own during all the years of his membership, the reason of that being that when he had come there it was wiser on his part to listen and learn than to speak, especially as he had an opportunity of repeating elsewhere what others said. He could not help alluding, however, to what Mr. Howard had said with respect to the reading habits of the American people. He told them that the American farmers were a well-informed people—a reading people, and that they read agricultural publications to a very large extent. When he thought of the enormous circulation of agricultural periodicals mentioned by Mr. Howard, and compared it with the circulation of similar publications in this country, he was at a loss to understand the difference. He could only account for it by the fact that the population of America was scant for the extent of territory, and that there were therefore not such means of communicating ideas between man and man as existed in this country. Still, he thought it would be well if English farmers were more like the farmers of America as regarded the habit of reading what concerned them in their calling. He had been much struck with the vast amount of attention which had been paid in America to the satisfactory ingathering of the harvest. When he heard of the place which reaping and mowing machines occupied in the manufacturesof America, he felt quite astonished, and in comparison it almost seemed as though such machines did not exist at all in this country. He must say that, considering the fickleness of the English climate, that subject was one which was especially deserving of the attention of the Farmers' Club; and he thought an evening should be set apart for a discussion on the best means that could be devised for securing the safe ingathering of the harvest.

Mr. Lloyd said he was an Englishman, but being in America this time last year, he then had a message given to him for English farmers, which he could not have a better opportunity of delivering than was presented that evening. Travelling in North and South Carolina, just after the war, he had to stay many days and nights in remote places, and he was then asked, if it should ever be his lot to meet any English or Scotch farmers in his own country, to tell them that the Southern States were the places for farmers, having a little capital and determined to work hard, to go to, if they were not doing well at home. There, he was told, they might buy for a very small sum land of Southerners who had died in the war or been ruined; and it was land of excellent quality. The American newspapers were filled with advertisements of large tracts of such land, which were to be disposed of. Every member of a family had in some instances been killed during the war. People in the South told him that Northern people would not come there, because the Southerners would not associate with them, but that if strangers to the country came, there would not be the same difficulty, but they would be kindly received.

Mr. Wilkins, British Consul at Chicago, said his apology for appearing in that position was that he had been living for twelve years in that famous city of which they had heard so much that evening. He wished first to thank Mr. Howard on his own behalf and on behalf of a great number of American friends, whom he had left behind, for the spirit in which he had travelled through that country, and the manner in which he had told the meeting what he had seen. He had never had the pleasure of seeing Mr. Howard till that evening; but he must say that nothing which had occurred during the twelve years he had been at Chicago was more likely to cement good feelings between the two countries than the manner in which the United States had dealt with the Fenian question, combined with the speeches elicited by telegraphic intelligence of the fact in the British House of Commons, and the manner in which Mr. Howard had that evening referred to America, and the kind and friendly feelings expressed toward America in the speeches which followed. It had been remarked that ten Americans came to England for one Englishman who went to America. He ventured to say that fifty Americans read about England for one Englishman who read about America; and it seemed to him that Mr. Howard had hit upon a particularly happy way of placing his views of travel before the English and American public. Almost every other writer or speaker—he referred now to professional writers—had constantly endeavoured to draw comparisons, which as school-boys we all knew to be odious, instead of illustrating the differences by pointing out the difference of circumstances. In Mr. Howard's paper there was an absence of that fault, and he believed it would produce an excellent effect. He had further to say that when he first went to America he found his wife in Chicago. When he went, there were but five thousand inhabitants; his wife was now only thirty years of age, and there were 200,000 inhabitants. Mr. Howard referred to Mr. Sullivan; he (Mr. Wilkins) knew him well; he also knew Mr. Emery Cobb, having been acquainted with him for ten years. Let him mention a fact in illustration of the abundance of produce. In 1860 he was shooting with an English gentleman near Mr. Cobb's farm. While they were out they received the hospitality of an American farm-house. They went into the house and asked for a cup of milk. A boy belonging to the family, the father and mother being out, immediately went and got a milk-jug, which was about half-full, and poured the milk out upon the ground. His (Mr. Wilkins's) companion—a landed proprietor in this country—said to the boy, "If you were a son of one of my tenants I would give your father notice to quit." In conclusion, he would express a hope that other members of the Farmers' Club would travel in America, and when he went back there he should be very glad to see them.

Mr. T. B. Dring (Claxby, Spilsby) remarked that, notwithstanding what was said by Mr. Howard about the land of America being so light and so easy of draught, it was a question whether, looking at the produce mentioned, the light land of America could be as profitable as the heavy lands of our own country. Mr. Howard said nothing about root crops.

Mr. Howard observed that there were scarcely any root crops to be seen.

Mr. Dring said he should be glad to know the reason of that, and whether it was possible to grow roots in

America, and to store them up for winter so as to be enabled to increase the sheep production.

Mr. C. S. Read, M.P., would like to know why Mr. Howard thought Indian corn could not be raised in this country as fodder. Was it owing to the soil, or the climate, or some other cause, that Indian corn was raised as fodder in America to the height of eleven or twelve feet, while in this country it only attained three or four feet?

The Chairman said Mr. Dring had just asked a question about the capability of lands in America as regarded the growth of root crops. If any American gentleman present could give them the reason why so few root crops were grown in America they would feel much obliged to him. We looked upon such crops as one of the most valuable productions.

Mr. Parsons, from the United States, said he could only state that that was a matter about which he had no knowledge whatever.

Mr. Coussmaker (Westwood) had risen merely to answer the question of Mr. Read, about the growth of Indian corn. The great Mr. Cobbett was once his neighbour, and, acting under his instructions, he obtained seed enough to grow two or three acres of that kind of corn. His seed was what was called sixty days' seed, it being supposed that it would have ripened sufficiently for harvesting within that period; but it did not fulfil that condition. They had a favourable autumn, and yet he did not harvest before Christmas-day (laughter). He thought, therefore, that "climate" was the answer to the question put by Mr. Read. Our climate would not allow of the growth of Indian corn.

Mr. C. S. Read, M.P., observed that he spoke of fodder.

Dr. Voelcker (Salisbury-square) believed the growth of Indian corn was, to a great extent, a question of climate. It required a short but very hot summer. Hence it could be grown in the North of Germany, where they were almost certain of three weeks of hot weather, which could not be at all relied upon in England. It had been tried in Gloucestershire, and had there been found not to be worth anything as fodder. In exceptional years it might, of course, be grown, but not as a rule. He had therefore come to a conclusion that this question was altogether one of climate, and that it was a mistake to attempt to introduce Indian corn in this country as a fodder crop.

Mr. Griffin (of the United States) said he could not help thanking Mr. Howard for the very kind expressions which he had used in reference to "things in America." He was not a practical farmer himself, but he had been long acquainted with agricultural matters. With regard to roots, he apprehended that the chief reason why they were not cultivated to the same extent in America as they were in England was that there was no necessity for them. There was an abundance of other fodder for cattle, and consequently they did not produce roots. As regarded the growth of Indian corn, he thought that was a question of soil rather than of climate. In the far West there was a rich black loam, from fifteen to twenty feet deep; and there there was no difficulty in growing Indian corn.

Mr. J. A. Nockolds (Stort Lodge, Bishop's Stortford) said he should like to know what kind of game the two gentlemen alluded to by Mr. Howard went fourteen hundred miles to shoot. If it were the moose-deer of Canada, he could understand the matter, because one of them would occupy two gentlemen for a month.

Mr. Howard then replied. He said there had been two most important questions suggested that evening which would do well for discussion next year, one being What was the best country for an English farmer to send his son to? and the other, Which was the best machine to harvest their crops? He was quite sure that if the gentlemen who had named those questions on that occasion would undertake to introduce them next year, the committee would be very happy to place them on the card. Mr. Thomas asked him, in effect, whether he thought large and opulent farmers would do well to send their sons out to the United States to settle? Now, in reply to that, he would say this—that one of the first memoranda which he made in his diary after seeing the United States was, that it was no use to send a fool to America (laughter). If a man was to succeed in America he must be a thoroughly practical man—a man of business (Hear, hear). As labour was a part of the outlay so important, the man who went there to pursue the business of farming must, he repeated, be thoroughly practical: he must know thoroughly the value of labour. It would not suffice for him to know how to ride a horse across country: that would avail him very little in a new land. But he could only say that if he (Mr. H.) were a farmer, and had half-a-dozen sons to settle out, he should not hesitate for a moment, even though he were ever so well fixed in this country, to go with them across the Atlantic; and he would add that if he were not pretty "well fixed," as the Americans said, here, he should very soon go to America himself. He could not speak as to the comparative merits of the Argentine Republic and the United States, as he had not visited the first-named country; but he had no doubt there were many countries where good, sharp young fellows could do better than in England, because there was more elbow-room in them. He thought Mr. Smythies' remarks very valuable, and he hoped he would next year introduce the question "Which was the best country for a young English farmer to settle in?" Mr. Tuxford seemed surprised at the number of agricultural machines made in America. In one town, the town, or rather the city—for in America they were all cities—of Auburn, he visited a number of factories where thousands of machines were turned out every year. In Auburn alone, he should say, from twelve to fifteen thousand reaping-machines were made annually. American farmers took to new inventions much quicker than English ones. If new things were brought out, the Americans did not, as was so much the case here, stop to ask their neighbours how it succeeded; they acted on their own impressions, and bought the thing, as they expressed it, "straight off." They were, in fact, more self-reliant than farmers in England. Something had been said about the desirableness of settling in North or South Carolina, which he could quite endorse. He came home with the President of the North Carolina Railway, and the chairman of the only bank in the South that did not fail during the war who assured him that if Englishmen did but know the advantages which presented themselves in the Northern part of the Southern States a vast number would go out at once. They remarked that cotton crops in America were much more profitable than corn crops in England, the produce of an acre of cotton-growing land being worth £50. As it might be supposed that he had come home with a good many Yankee notions—(laughter)—he begged to say that he had lost none of his nationality. He was as much attached to the institutions of his own country now as ever (cheers). He thought the institutions of America were well adapted for that country; and on the other hand, he thought that England would be very unwise if she were to meditate any *great* change in her own constitution (cheers.) There were many English travellers in America; and among them were some gentlemen who, forgetting there was the letter R in the alphabet, asked you at the station, "What time will the train auwive?" (laughter), and who could see nothing to admire in America except the scenery. The American people heartily despised the class whom we called "swells" (Hear, hear.) Such persons were not likely to receive much consideration from them; but if a man of business and sense went among them, he was sure to get on well. As regarded what Mr. Dring said about horses, what he wished to state was, that ploughed land was lighter in America than in England. Where we ploughed an acre and a-half in given time, Americans ploughed two and a-half acres; but they took good big furrows. The question of roots was a question not only of climate but also of capital. People who farmed in America were, generally speaking, like English farmers, not over-burdened with capital, and the amount of stock they could keep was restricted by that cause. If they could supply mutton enough for the market they had no inducement to keep a large flock of sheep. As he had before observed, the pigs of America were much more numerous than those of England. That roots might be grown there could be no doubt. In Virginia he saw crops of sugar-beet, and in the north crops of white turnips and swedes; but you might travel hundreds miles without ever seeing such things. When they remembered how few sheep, comparatively speaking, were kept in the vast territory of the United States, they must feel that there could be no great necessity for growing roots. Perhaps a man farmed one-third more land than he either wanted or cropped. When his horses were idle he turned them out to grass, and he pursued a similar course with his sheep and cattle; and, therefore, he did not need to raise artificial fodder. As to Indian corn, he had before remarked that he did not see why Indian corn should not be grown in this country as fodder, and nothing which he had heard that night had changed his opinion. It appeared to him highly desirable that it should be produced in that way; but he had understood the use of a great deal of lime was necessary to ensure the constant growth of the crop. As regarded the question of Mr. Marsh about hops, he knew little about the matter beyond the fact that the beer was very bad (laughter).

Sir **James Duke** said he had great pleasure in proposing a vote of thanks to Mr. Howard for his excellent paper. He had given such an interesting description of what he saw in America that no one who heard it could fail to be gratified. As the municipality of London had been blamed for not providing better accommodation for cattle, he wished to know whether the three or four hundred acres set apart for that purpose at Chicago were provided by the municipal body there, or by a joint stock company.

The Rev. E. **Smythies** seconded the motion, which was put and carried.

Mr. **Howard**, in returning thanks, said he believed the great cattle market of Chicago was provided by the co-operation of the railway companies and the municipality. The Corporation was one of the most spirited bodies of that kind he ever met with. As the surveyor of the Corporation of London, Mr. Haywood, had visited Chicago; he might perhaps tell Sir Jas. Duke much about municipal matters. Let him mention one fact, which showed how enlightened Chicago was. Not content with drawing their water from the banks of Lake Michigan, where it was sometimes made muddy by storms, the municipality had constructed a tunnel two miles under the lake, in order to draw thence a purer supply for the inhabitants of Chicago. In that respect he believed the Corporation of the City of Chicago was far ahead of that of the City of London.

On a motion of Mr. **Skelton**, seconded by Mr. **John Nash**, thanks were voted to the Chairman, and this terminated the proceedings.

The following are the Rules referred to in Mr. Howard's Paper:—

NEW YORK STATE AGRICULTURAL SOCIETY.

TRIAL OF MOWERS AND REAPERS, at AUBURN, 1866.—REGULATIONS.

1st. No machines will be allowed to enter after the second week preceding the time fixed for the commencement of the trial. The object of this regulation is to allow ample time for the arrangement of the grounds.

2nd. The judges, the president and secretary, and a committee of the officers of the society will be on the grounds at the beginning of the week preceding the trial. They will cause—(*a*) The grounds to be staked off into lots of exactly one acre, by stakes three feet long by two and a-half inches wide; the number from No. 1 upwards will be placed on the top of the stake and turned inwards towards the lot; there will be a space of two feet in width between each lot. (*b*) To cause a headland six rods in width to be mowed, and the hay removed from the lot before the commencement of the trials. (*c*) To have the following implements ready upon the grounds before the commencement of the trial: A platform scale; a pair of small scales; a speedometer (in case one end of the lot cannot be seen distinctly from the other, poles will be provided as guides); a dynamometer; a measure for side draught; a two-foot rule; a measure tape 100 feet long; two of five feet long; a portable forge; a pair of compasses; a machine for testing the temper of knives; a sector; blank books and lead pencils for each of the judges; a carriage for the conveyance of the judges to and from the grounds to their lodgings, if the trial grounds are too far from their lodgings. Dinner will be furnished on the field. A carpenter with his tools to be present. A sufficient number of policemen will be provided to keep intruders off the ground.

3rd. The chairman of the board of judges will prepare a series of slips of paper numbered from one upwards. Each competitor will draw one of these, and the number so drawn will be the number of the lot to be mowed by him.

4th. The judges will be subdivided into the following committees:—

1. *On Grains and Grasses.*—They will report to the chairman of the judges on the following points: (*a*) The kinds of grain and grass growing in each field. (*b*) If there are different kinds of grain or grass growing in the field, they will give their names, and estimate the proportion which each kind bears to the whole amount. (*c*) State the average length of each kind of grass or grain, also thickness on the ground. (*d*) Give the names of the weeds growing in the field, their proportions, average length, and their toughness of stalk. (*e*) Estimate the total amount of grass or grain on an acre, by measuring a small area of which an acre is an exact multiple. Weigh the grass or grain on such area, from which weight the amount on an acre may be calculated.

2. *On Weight and Price.*—This committee will ascertain (*a*) The exact weight of each machine when ready for work. (*b*) The price of the machine at the shop of the maker. (*c*) If any extras are sold with the machine, they will say what they are. (*d*) If there is a difference in price when extras go with them, they will state what it is. The Committee of *Description* will (*a*) give a general description of each machine. (*b*) They will describe minutely those portions of the machine which are peculiar to it, and which constitute its individuality. (*c*) They will point out any departures from established mechanical principles in its construction, giving their reasons in full.

3. The Committee on *Mechanical Arrangements* will ascertain and record (*a*) The number of horses required for each machine. (*b*) The number of men, and the capacity in which they are employed. (*c*) The kind of material used in the construction of each machine, and the opinion of its durability. (*d*) Examine the workmanship of each machine, and state the nature, locality, and probable consequence of each defect. (*e*) The metals that are used for journal bearings. (*f*) Observe the machine after it has been used, and state what parts have been heated, and to what extent. (*g*) Examine them carefully after they have been used, to see if any part has been unduly rubbed or worn. (*h*) Observe the facilities for oiling each part of the machine, and for easiness of access to each bolt, screw, and nut. (*i*) What arrangements are made for cutting stubble at different lengths. (*j*) In what manner

are the gavels delivered, behind or at the side. (*k*) The relative portability and compactness of the machines. (*l*) The contrivances adopted for the security and comfort of the driver. (*m*) Ascertain the temper of each knife. This committee will adopt some scale of numbers, by which they may express the relative values of the machines on such of the above points as are relative in their scope.

4. The Committee on *Quality of Work* will—(*a*) Assume the No. 40 to represent the best work that can be done. The No. 30 as representing the best work that can be done with a hand scythe. The No. 20 as inferior to any work that would be tolerated by a respectable farmer. The gradation of work will be expressed by numbers intermediate to these. (*a a*) The standard speed to which competitors are requested to conform, is one acre per hour. (*b*) They will pay particular attention to the speed of the machine at the time of clogging. For this purpose they will be furnished with a speedometer, which, in connection with the time occupied, will enable them to ascertain the maximum and minimum speed at which each will operate usefully. (*c*) Observe the evenness of the cut; whether it is higher at one end than the other, and whether it is scalloped. This observation to be made when the machine is moving at the standard speed of one acre per hour. (*d*) The condition of the grass when it is cut; whether it is evenly spread or in ridges. The machine which leaves the grass in the best condition for drying is the most perfect. (*e*) The length of stubble left by each machine. To accomplish this, numerous measurements should be made in at least ten different portions of each lot, average taken. (*f*) See if any spears of grass or grain have been drawn out by the roots; if so, state the proportion. (*g*) What is the appearance of the cut end of the machine stubble; is it clean cut or torn off. (*h*) The closeness with which the machine cuts up to obstacles, such as stones, stumps, and fences. (*i*) State the condition in which the machine leaves the gavels; whether in the best condition for the binder or not. (*j*) Is the grain beaten out by the action of the machine when moving at the standard speed? (*k*) The condition of the grass or grain with respect to wetness or dryness. The Committee on *Time* will note—(*a*) The exact time of starting each machine. (*b*) They will observe the time occupied by each stoppage, stating its cause, and specifying those which were occasioned by the fault of the machine, and those which were not connected with the machine. N.B. It will be distinctly understood that no credits will be given for rapidity of work done by hurrying the horses. It is the desire of the society that the manufacturer should move the machine at the speed which he deems best adapted to show its merits. (*c*) The time of final stoppage of each machine. (*d*) In the dynamometer trials they will note the exact length of time that the dynamometer is applied to the machine while in motion. (*d d*) In these trials the machine will be set to cut the stubble three inches in length. (*e*) In the trials of minimum speed, they will note the exact time a machine is passing over a given space.

5. The Committee on *Dimensions* will make and record the following measurements—(*a*) The length of cut. This measurement will be in all cases the length of the actual cut, not the grass gathered by the divider. (*b*) The diameter and breadth of the driving wheel. If the wheel is not smooth state the length and breadth of the projections, and their distance from each other. (*c*) The number of vibrations of the knife to each revolution of the driving wheel; also the length of each vibration. (*d*) The advance of the machine while making one vibration. (*e*) The length of the base of each tooth of the cutter, and the distance of the apex from the base. (*f*) The breadth and thickness of each end of the cutter bar. The material, whether of wood, steel, or iron; also the same dimensions for the finger bar. The weight of the knife and cutter bar will be noticed. (*g*) The distance between the fingers or guards; length of the vibrations, and whether it is greater or less than the distance between the centre of the guard fingers. (*h*) Is the knife sickled-edged or smooth? (*i*) The diameter of the reel, and the number of its revolutions in relation to the driving wheel. (*j*) The pitch of the gearing. (*j j*) The angle at which the cutter and guard finger meet in severing the crop. (*k*) The length of the Pitman rod, and its weight and material. (*k k*) The width of the finger at the point where the face of the cutter section meets it, and at the point where the apex meets it.

6. The *Dynamometer* Committee will—(*a*) Ascertain the total power required to operate each machine while cutting. (*b*) The power required to draw the machine over a smooth surface with the knife in motion but not cutting. (*c*) The power required to draw the machine over a smooth surface, the knife being in repose. (*d*) Measure the side draught. The dynamometer will be applied once across the field and back. The four machines consuming the least power on the first trial shall be tried again; and if the consumption of power remains relatively the same the trial will be final. If otherwise, the trials will be repeated until the committee satisfy themselves which really is the most economical of power. When all these points have been accurately determined, the judges will consider them and decide—(*a*) Which is the cheapest machine; (*b*) The most simple in its construction; (*c*) The most durable; (*d*) Which requires the least power; (*e*) Which has the least side draught.—This will be determined by its capacity to perform a given amount of work, in a workmanlike manner, in a given time, in the most economical way. (*f*) Which does the work in the least time; (*g*) Which does the best work; (*h*) Which is managed with the most facility. In determining the last question, they will consider—(*i*) Which is the most portable when in operation, or otherwise. (*j*) The arrangement for throwing in or out of gear. (*k*) Accessibility of parts for convenience of oiling, tightening nuts, &c. (*l*) Convenience and safety of the driver. (*m*) Readiness with which the machine may be brought into perfect operation from a dead stand, and quality of work with slow motion. (*n*) Time and room occupied in turning and avoiding abrasion of the turf. (*o*) Adaptation to uneven surfaces, cutting at different heights, and to cutting different kinds of grass. When the judges have determined these questions, they will proceed to decide which of the machines is best adapted to the use of the farmer, by having the greatest number of merits and the fewest defects.

5th. In case two or more machines should approach very near to each other in merit, the judges will give such machines new trials, as in tangled clover, on soft bottoms, on stony surfaces, and such other places as seem best adapted to settle their relative merits.

6th. Only four machines shall be in operation at once, and each machine shall be attended by a member of the Time Committee all the time that it is in action.

7th. The machines will be tried in the order of their numbers. Lot No. 1 will be cut first, No. 2 next, and so on.

8th. The trials will commence at 8 a.m., and continue until 6 p.m., with an intermission of one hour for dinner.

9th. Each competitor will furnish his own team and driver.

10th. It is of importance that each machine be put in complete running order before coming on to the ground, and the knives should be perfectly sharp before the dynamometer trial takes place. No allowance will be made by the judges should this precaution be neglected. Competitors should be well supplied with oil, wrenches, and duplicate parts of the machine.

11th. A lot will be provided in which competitors may try their machines previous to entering upon the regular trial.

12th. No persons will be permitted to go upon the grounds while the trial is proceeding, except competitors and judges.

13th. The police will prevent all persons handling the cut grain, except the owner and his men.

14th. The chairman of the judges will tabulate the reports of the sub-committees, and will draw up a full report of the trial.

15th. Exhibitors shall present no other machines for trial than those which they habitually furnish from their shops to their customers. The object of the society is to furnish for farmers the best machines in actual use, and they do not wish to countenance any other, and they desire none others for trial than those in market for farmers' use.

Entries to be made at the secretary's office at least one week previous to the trials.

At the meeting of the Committee on Monday, November 5, Mr. Edward Little, of Lanhill, Chippenham, was elected Chairman of the Club for the year 1867.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MONTHLY COUNCIL: Wednesday, Nov. 7.—Present, Mr. Thompson, President, in the chair; the Earl of Shrewsbury and Talbot, Lord Chesham, Lord Feversham, Lord Tredegar, Lord Vernon, Lord Walsingham, Major-General the Hon. A. N. Hood, Sir A. K. Macdonald, Bart., Mr. Acland, M.P., Mr. Amos, Mr. Barthropp, Mr. Bowly, Mr. Cantrell, Colonel Challoner, Mr. Clayden, Mr. Dent, M.P., Mr. Druce, Mr. Brandreth Gibbs, Mr. Holland, M.P., Mr. Hornsby, Mr. Hutton, Mr. Milward, Mr. Pain, Mr. Pope, Mr. Randell, Mr. Clare Sewell Read, M.P., Mr. Rigden, Mr. Robert Smith, Mr. Torr, Mr. Wallis, Mr. Wells, Mr. Jacob Wilson, Professor Wilson, Mr. Frere, and Dr. Voelcker.

Mr. Samuel Jonas was elected a Governor of the Society.

The following new Members were elected:

Allison, James John, Sunderland.
Beaver, James, West Leaze Farm, Swindon.
Body John, Wittersham, Staplehurst.
Dyke, Francis Hart, 3, Museum-street, York.
Hock, Thomas Francis, Kingslow, Bridgnorth.
Rhodes, Arthur, Twyford House, Bishop Stortford.

FINANCES. — Major-General the Hon. A. N. Hood, chairman, presented the report, from which it appeared that the Secretary's receipts, during the past three months, had been duly examined by the Committee, and by Messrs. Quilter, Ball, and Co., the Society's accountants, and found correct. The balance in the hands of the bankers on the 31st October was £1,208 0s. 11d. The quarterly statement of subscriptions and arrears to the 30th September and the quarterly cash account were laid on the table. During the recess the Secretary had issued a circular to those members owing £2 and £3 each, and the committee recommend that another circular be sent to those members in arrear for the previous and present years. The Committee recommended that the sum of £1,000 be sold out of the funds. As a means of inducing defaulting members of the present year to pay up their subscriptions, the Committee recommend that the last number of the Journal should be sent to each with a circular. This report was adopted.

JOURNAL.—The President reported that Mr. Coleman having travelled more than 500 miles to collect materials for a report which he had been requested to write for the Journal, the payment for which, at the usual rate, amounts to £12 12s., the Committee recommend that an additional sum be given him for travelling expenses.

ESSAYS.—In Class V. the two competing Essays are adjudged not to possess sufficient merit to entitle either of them to the prize. This report was adopted.

HOUSE.—Major-General the Hon. A. N. Hood presented the report, informing the Council that the works for the improvement of the House have been completed, with the exception of colouring, papering, and final painting; and submitted the report of the architect, Mr. Fowler, who appears to have carried out the work in a satisfactory manner.

"Royal Agricultural Society of England—
12, Hanover Square.

(TO THE HOUSE COMMITTEE.)

"GENTLEMEN,—I beg leave to report that according to your instructions received on the 1st August last, I prepared the necessary working drawings and specifications for carrying out the alterations determined on by the Council: upon these tenders were obtained, and that of Mr. Manning (amounting to £598), being the lowest, was accepted. The works were commenced on the 28th August, and are now completed, and I am happy to be able to state that, notwithstanding the great disadvantage of very unfavourable weather, I consider that the work has been done in a very satisfactory manner, and I believe the alteration will be found a great improvement to the Society's premises. I may mention that the new rooms are not yet papered, as it was impossible for the new plastering to be sufficiently dry to receive the paper. I did not include that in the Contract, although it was of course included in my estimate of £870, authorized by the Council. Since the completion of the works I find that a complaint has been made by the Secretary of the Zoological Society that some of their chimneys smoked, and having investigated the matter I find that the complaint refers to two flues in a stack at the back which was thought to be disused, and was not, therefore, carried up; by carrying up these flues the objection will be removed, and I therefore beg to recommend that this should be done: the expense will be about £5.

"I beg leave also to certify that Mr. Manning is now entitled to receive a further payment of one hundred and thirty pounds (£130), on account of his contract, making with the two previous payments the amount of £550.—I have the honour to be, Gentlemen, your obedient and faithful Servant,

"CHARLES FOWLER, Jun., Architect.

"12, Furnival's Inn, Nov. 6, 1866."

A claim having been made on the Society for parochial rates, the Solicitors were instructed to resist it, and by the accompanying letter it will be seen that two-thirds of the rate will be remitted on the certificate of the Registrar of Friendly Societies. The Committee recommend that such certificate be obtained.

(PAROCHIAL ASSESSMENT.)

"13, Suffolk Street, Pall Mall East, S.W., Nov. 2.

"Dear Sir,—On the further hearing of the Society's appeal this morning, the magistrates reduced the assessment on the Society's house from £240 to £80—the latter amount representing the value of that portion of it which is occupied by the Secretary as a private residence—but subject to the further Certificate of the Registrar of Friendly Societies that the alterations in and additions to the Society's bye-laws and regulations since the date of his former Certificate of 1844 have not affected the original constitution of the Society or its property further than the occupation of the Society's premises. As the residential portion of the premises really represents a money interest, we felt from the first that its exemption from assessment could not be successfully maintained.

(Signed) GARRARD & JAMES.

H. Hall Dare, Esq., Secretary,
Royal Agricultural Society of England."

The Committee have also to report a claim has been made by the Metropolitan Board of Works for a Main Drainage Rate, and recommend the Solicitors be instructed to resist it. This report was adopted.

EDUCATION.—Mr. Dent, M.P., stated that the Committee have received a report from the Oxford Examiners, and have allotted the prizes offered by the Society as follows:—

To JUNIOR CANDIDATES, who were distinguished in the General Examination.

Davis............	in First Division, £14. £7 each.
King............	
Lovett...........	in Second Division, £6. £3 each.
Chubb...........	
Higham.........	in Second Division, £5. £1 each.
Day..............	
Sargent.........	
Luxton..........	
Mortimer.......	

5 also passed in Third Division.
1 failed.

Seniors.

A. Pollard	First Class	£7	0	0
J. Lake		5	0	0
C. J. Langley		5	0	0
Hill	Second Class	£2	0	0
Bovey		2	0	0
Rudd		2	0	0
Mackwood		2	0	0

10 in Third Class—5 did not pass.

List II.—Juniors.

Pure Mathematics.—14 entered: 3 obtained more than half marks; 10 others passed; 1 failed; Chubb, £4; King, £4; Mortimer, £4.

Mechanics and Mechanism.—2 entered: No prize.

Chemistry.—No entry.

List II.—Seniors.

Mathematics.—21 entered: 5 obtained more than half marks; 12 passed; 4 failed; *Langley, £5; *Pollard, £5; Bovey, £2; Lake, £2; Rudd, £2.

Chemistry.—2 entries: *Kingdon, £5; *Pollard, £2.

Physiology.—2 entries: *Sanders, £5; Pollard, £2.

Geology.—No entry.

Expenses for printing special examination papers at the last Oxford examination, postage, &c., £1 4s. 8d. to be paid.

That a grant of £5 5s. each should be made to Professors Price and Daubeny for conducting the Society's recent examinations at Oxford, accompanied by an expression of thanks on the part of the Society for their attention and courtesy.

50 entries for the next Cambridge examination in December.

The Committee have had before them the question of excluding from their examination those who had obtained prizes at previous examinations, and recommend that there be no restriction, except as to those who have obtained the first prizes in their special subjects. (Mechanics and chemistry applied to agriculture).

This report was adopted.

STEAM CULTIVATION.—Lord Vernon stated that the Committee have to report that, in pursuance of the plan sketched out by them in a previous report, and approved by the Council, two Committees of Inspection were appointed, consisting of the following gentlemen:

Committee No. 1.—Mr. J. Algernon Clarke, Secretary and Reporter; Mr. Robert Leeds; Mr. J. Nicholson.

Committee, No. 2.—Mr. Howard Reed, Secretary and Reporter; Mr. J. Hicken; Mr. J. Hemsley.

The Committee began work as soon as the state of the harvest in their respective districts would permit, and have made satisfactory progress, notwithstanding the very unfavourable character of the season for an investigation of this kind. The Committees have visited the counties of Bedfordshire, Berkshire, Bucks, Cambridgeshire, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Kent, Norfolk, Northamptonshire, Oxfordshire, Suffolk, Surrey, Sussex, Wiltshire and Warwickshire. In these counties more than 50 farms have been inspected, and a large amount of valuable information collected, which will be embodied in reports by Mr. Clarke and Mr. Howard Reed, and published in the next No. of the Journal. If the weather should remain favourable the Committee hope that the inquiry may be completed by the end of the present month.

BURY ST. EDMUNDS' MEETING.—Colonel Challoner reported the recommendations of the Committee: 1. That the preliminary prize sheets for Stock and Implements be distributed among the Members of the respective Committees for revision, and to be submitted to the Monthly Council in December. 2. That the Meeting be held in the week commencing Monday, July 15, 1867.

This report was adopted.

COMMITTEE OF SELECTION.—The President stated that—

1. In accordance with the instructions received by the Council in August, the Committee have to report that the six ex-officio Members of this Committee for 1866 will be—

President.—Mr. Thompson.

Chairmen of Committees.—Finance, General the Hon. A. N. Hood; Journal, Earl Cathcart; Chemical, Mr. Lawes; Stock Prizes, Lord Walsingham; Implement, Colonel Challoner; Country Meeting, Lord Tredegar.

The Committee would suggest that for the short remainder of the year 1866, the six elected members of this Committee should be chosen from those who have up to this time acted as a Provisional Committee, and they accordingly mention the names of The Earl of Powis, Lord Vernon, Mr. Druce, Mr. Randell, Mr. Torr, and Mr. Jacob Wilson.

2. The Committee recommend that the vacancy in the list of Vice-presidents caused by the death of Mr. Raymond Barker, should be filled up by the election of Mr. Jonas.

3. The vacancies in the Council caused by the resignation of Mr. Hamond and the death of Mr. Henry Wilson, have now to be filled up. The name of Major Wilson, of Stowlangtoft, having been brought before the Council by Mr. Torr, previously to the appointment of the Committee of Selection, the members of that Committee feel that the claims of Major Wilson are so great, more especially in connection with the approaching Bury meeting, that they have great pleasure in throwing their weight into the scale in favour of his appointment. The other vacancy they recommend should be filled up by the election of Sir Henry Vane, that gentleman, in addition to his other recommendations, being a resident in District A, in which there are 473 Subscribing Members of the Society. District A is at present represented by only two Members of Council.

This report was adopted.

The President having proposed that Mr. Jonas be elected a Vice-President in the room of the late Mr. Raymond Barker, the nomination was seconded by Lord Walsingham, and Mr. Jonas was unanimously elected a Vice-President of the Society.

The name of Sir Henry Vane, Bart., of Hutton Hall, Penrith, having been proposed by Mr. Jacob Wilson and seconded by Lord Tredegar, and that of Major Wilson, of Stowlangtoft Hall, Bury St. Edmunds, having been proposed by Mr. Torr, and seconded by Mr. Milward, they were unanimously elected Members of Council, in the room of Mr. Hamond, resigned, and Mr. Wilson, deceased.

The Council decided that the General Meeting of the Society should be held on Wednesday the 12th of December, at noon.

A minute of a meeting of the Council of the Yorkshire Agricultural Society was read as follows:—That the thanks of the Society be given to the Council of the Royal Agricultural Society for the use of their dynamometer at the trial of implements recently held at York. The Council ordered that this be recorded in the Minute Book of the Society.

The thanks of the Society having been ordered for various present books to the library, the Council adjourned.

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AGRICULTURAL PRACTICE AND PROSPECTS IN SCOTLAND.

At the quarterly meeting of the Morayshire Farmers' Club, presided over by the Duke of Richmond, on Friday, November 9, the Secretary read the following, which was approved:—

REAPING BY MACHINERY.

REPORT BY THE COMMITTEE APPOINTED AT THE QUARTERLY MEETING OF MEMBERS OF THE MORAYSHIRE FARMERS' CLUB IN AUGUST, 1866, TO EXAMINE REAPING MACHINES IN THE COUNTY.

In terms of the remit made to them, your committee inspected some twenty machines at work on fifteen different farms in the county, and beg to report as follows:—They think it unnecessary to describe the reapers examined by them in detail, as, doing so, in many cases the description would only be a repetition. They conceived that it was not so much their duty to report on the comparative merits of the different reapers as on the general character of the work performed by the various classes now in use. All the machines cut well, almost all equally well, after making allowance for variety of soil and the difference in the preparation of fields. The great distinction in the work lay with the person who tilted the sheaves from the manual delivery; so also in the self-delivery, as much depended on the completeness and adaptation of the delivering apparatus. The reapers examined may be divided into three classes: 1st, The one-horse manual; 2nd, The two-horse manual; and 3rd, The two-horse self-delivery. As to the one-horse reaper, although the work done by it is equal to that of any of the others, yet, from the less breadth cut, the heavy draught, and its requiring a driver and man for tilting the same as a two-horse machine, the difference in price is not sufficient to recommend its extensive use on the larger farms. As to the two-horse manual delivery machine, the work done was very satisfactory; and from the care and workmanlike manner in which some of the men turned off the sheaves, the most perfect work was done by this class of reapers. We may instance Miss Paul's farm at Hatton of Kinloss. Everything was done in a very neat and superior manner, and such as left nothing to be desired. One thing recommends itself very strongly in the management of this machine. A hand is exclusively employed in walking before the machine along the edge of the uncut corn to lift up any stalks which may have fallen over in a different direction from the general lay of the corn, the effect of which quite perfectly prevents any straggling of stubble. Your committee now come to the two-horse self-delivery. The cutting with this machine is equal to the others, and the delivery into sheaves very fair, and, with a little further improvement in the delivering arrangement, will very probably come into general use. The work done at the Home Farm of Altyre by two of these reapers was fully equal to the average of the whole work inspected. From the superior work done by all the classes of reaping-machines, we do not hesitate to recommend the employment of them on all farms. At the same time, to do full justice to both machine and crop, a careful preparation of the land is necessary, broad ridges, thorough harrowing, furrows well filled up, large stones carted off, and the land well rolled. It is also of the utmost importance to have the knives regularly and properly sharpened, and the gearing of the machine frequently oiled. Your committee must not, however, omit to mention that this has been a favourable year for the trial of reapers, crops being generally light. Notwithstanding this advantage, we inspected several fields where machines were at work in heavy crops; and the work done was sufficient to recommend their general use. Some disadvantage attending the use of reapers is caused by occasional breakages; and, from the closeness and compactness with which the stalks are put together in a sheaf, it is more difficult in a harvest like the past to get the crop into condition for stacking than when it is cut with the scythe; but it is more than compensated by the neat, clean, and tidy way in which the crop can be lifted. The sheaves should be of a small size. In many of the reapers examined, the draught was heavy; and in others, the horses had to go too fast, in order to get up the requisite cutting speed; while some, from the small breadth of travelling wheel, were liable to sink in soft soils, thereby increasing the draught, as well as injuring the young grass. The two-horse reapers cut, in favourable circumstances, from eight to ten acres per day, employing eight or ten hands besides the raker and men employed about the machine. Your committee estimated the expense of cutting with the machine at about 5s. 6d. per imperial acre. The machines examined were made by Samnelson, manual and self-delivery; Halliday, manual; Dray and Hussey, do.; Johnston, Newmill Iron Works, Elgin, do.; Falconer, East Grange, do.; Brigham and Bickerton, do.; Gardiner and Lindsay, do.; Peter Winton, Thorn, Falkirk, self-delivery—and cost from £17 to £35 each. The machines were inspected on the following farms, vis.: Home Farm Altyre, Grangegreen, Middlefield, Netherton, Hillhead, West Grange, East Grange, Hatton, Coltfield, Ardgay, Kintrea, Keam, Shempston, Spynie, Linksfield, Orbliston, Mains of Orton. While your committee hope that improvements on reaping machines may be effected by the makers, they would urge on farmers and their servants to see as to the proper preparation and culture of the land, and the working of the machines, so that they may be more extensively used throughout the country. For this end, your committee would recommend that prizes of a fair value should be given for competition to servants in charge of machines, who would excel in the management and keeping of them in repair, as well as in the tilting of sheaves a proper size, and that arrangements should be made by another harvest for this purpose. The committee take this opportunity of conveying their thanks for the great courtesy shown by all the gentlemen on whose farms the machines were at work, and their willingness and readiness to afford every information as to the working and expenses. Reported by

GEORGE BROWN, Westerton.
ROBERT WALKER, Altyre.
JOHN FERGUSON, Grange.

STEAM CULTIVATION.

Mr. COOPER, Spynie, said that he brought the subject of cultivation by steam under the notice of the committee, who asked him to bring it under the notice of the first general meeting of the club. Cultivation by steam is being rapidly introduced into England and the south of Scotland, and parties interested in agriculture should look to the result with interest. Mr. Yool, one of their members, had started a steam cultivator upon his own hook; but he would propose that the club send a committee of their number to see a plough that had been brought to Kincardineshire where it was working, so that they might be able to report what it did. If this committee reported favourably to the club, he presumed they would be willing, as they had heretofore been, to encourage the introduction of one into Morayshire, by offering a premium if they saw fit to do so. The plough in Kincardineshire was said to be a very superior and efficient one. He had some communication with Mr. Greig, the manager of it, and he was invited to go along with any of his friends to see the work that had been done by it. It had just then finished a field of ninety acres, so that the Morayshire people would get a good idea of what was done.

Mr. GEDDES inquired whether the object af Mr. Cooper was to form a Steam Plough Company, or to report for the advantage of the members.

Mr. COOPER said if the committee reported favourably, then the club might take the subject up and offer similar prizes to those they gave formerly for the introduction of improved ploughs into the county. The club might in this way encourage members to get a more complete implement, just as by giving premiums they encouraged the introduction of good stock. He had no particular object further than to bring the subject forward. He begged to move that this subject be remitted to the standing committee to take such action as they might think advisable.

Mr. HARRIS, Earnhill, suggested that it might be well not to confine the committee to visiting the plough in Kincardineshire, but to go to other places, and see where the best system was carried out. In the Lothians, there were two or three systems, which it would be as well to see before reporting.

The Duke of **Richmond** suggested that the matter should be left to the committee to deal with as they thought proper.

Mr. **Geddes** said the only difficulty those around him saw was the want of money.

Mr. **Geddes**, in proposing the health of their patron, the Duke of Richmond, said: In his Grace's presence I need not say what I could say; but I can bear testimony to the just and liberal manner in which he acts towards his tenantry. I can say that he wishes no man to sit upon his land who would not be able to pay his rent and make a livelihood from his land besides. I am sure his Grace will continue to give us his assistance as he has hitherto done, and I hope we shall never do anything to forfeit that kindness and that attention which he has hitherto given us.

The Duke of **Richmond** said: I can assure you that it will be, as it has always been, my great desire to do all in my power to promote the interests of the Morayshire Farmers' Club; because, by promoting their interests in whatever way I can, I believe I am promoting the interests of agriculture in this part of the country. I certainly have inherited large possessions in these parts; and if I speak for a moment of myself, I must apologize to you, and confess that it was in consequence of the words which were used by my friend Mr. Geddes in introducing my health, which has induced me to do so. I received from my father, I may call it, a very loyal tenantry with the property; and one of the many pieces of good advice which he gave me, and which I have, and which I shall always endeavour to act up to, was—"Keep on good terms with your tenantry, and they will prove the very best friends you have, and the only way you can keep on good terms with them is by treating them as they ought to be treated. Treat them as your friends and as your equals, and not as your servants. Give them the land upon terms which they ought to have it on—terms on which they will be able to pay you such a rent as it ought to command, and leave them an ample margin to live in happiness, in comfort, and in prosperity." In these times, a great deal is talked of about setting the tenantry of the country at variance with their landlords; but I myself do not believe in anything of the kind. It may be that, in some small corners of the empire, such a state of things does exist; and if it does exist, I feel perfectly certain that the landlord is as much at fault as the tenants in those parts. I believe if the tenants are treated as they deserve to be treated—as a large and important body of the community, as a body who have it in their power to exercise a great deal both for the weal and for the woe of those who are dependent upon them, if they are made to feel the position which they do occupy and which they ought to occupy, and if they are made to feel that the landlord depends upon them quite as much as they depend upon the landlord, we shall hear few of those mischievous addresses in which it is intended to place the two classes at variance. I believe if you have a prosperous and happy and contented tenantry, it goes a great deal further than it at first sight appears to do—it permeates, if I may use the expression, down through the tenantry to the labourers of the country; and there is nothing more certain, as may be instanced from what has taken place for many years in the country, than that we are all apt, I do not care in what station we are—we are very apt to ape the habits of those immediately above us. If the tenants upon the property are such as I believe the tenantry upon the Gordon estates to be, then the labourers have a good example set before them, and one which they would do well to imitate; and if the tenantry are such as they ought to be, the labourers will be found happy and comfortably, and they will strive to act up to all the good qualities which they see in the tenantry whose servants they are. I believe by this means the three classes I have spoken of—the landlords, the tenantry, and the labourers of the country—being united together in one common bond of amity and friendship, we need not fear anything like a democratic revolutionary feeling getting hold of the country; but that we have one of the best means for the welfare and stability of the country.

Mr. **Harris**, Earnhill, said many people not acquainted with agricultural matters and regulations wondered at the respect shown to the landlords by the tenants. They viewed their connection as strictly commercial, the proprietor giving so much land for so much money. But the tenants themselves viewed it in a very different light. They knew that property had its duties as well as its rights, and were happy to know that in this county its duties were respected. In these days when leases were so strictly drawn up, there was not perhaps such good feeling between some landlords and their tenants. But when the leases were looser, when a man was actuated by a proper principle, those rights were always recognised, and he was sure they would all agree with him that on the occasion of entering a new lease between landlord and tenant, the feeling should be something more than commercial. When a landlord had it in his power to throw a man out of his house and farm—the house, perhaps, in which he was born, to which he brought his bride home, in which his children were born, and which was perhaps more hallowed to him by some great sorrow—the feeling ought to be something more than merely commercial. Considerations like these often weighed with a tenant, who would give perhaps £50 more rent than he knew he could safely do rather than leave, and though he might go on for a time, trusting to the course of events, they knew what was the general result. The tenant farmers respected and appreciated the different conduct on the part of the landlords of Morayshire, so far as he knew, without exception. One thing which accounted for the respect shown by tenants to landlords was that, apart from their being owners of land, they were often the bearers of well-known names and honours for deeds done by their forefathers in the field, or for their good conduct in the Senate.

Sir **George Macpherson Grant** said: I believe I am not speaking hastily, or speaking at random, when I say that the landed proprietors of this county are aware of the duties and rights which attach to their properties, and that it is their earnest and anxious desire to discharge these duties as freely and frequently as they wish to enjoy the rights which their land brings them. I hope that the day is far distant, and that the sun will never dawn on the day when the toast of the landed proprietors in this county will not meet with a kind and cordial reception in an assembly of the Morayshire Farmer Club. This is the first occasion I have been present, for I am sorry to say in the march of improvement railways were so long in reaching those who lived in the hills, that I have hitherto felt it difficult to be so much with the Morayshire Farmer Club as I should be; but it has always given me great pleasure to attend your shows. I came down from the hills anxious to meet you, anxious to learn something, and I find I have not been disappointed. I am but a very young man, perhaps the youngest proprietor in the country, and I feel deeply the responsibility which rests upon me. But I would venture to say, as a rule, that the proprietors cannot do better than follow the example which the late Duke of Richmond gave to His Grace the present Duke, and which we all know he so well follows. I find the best of feeling exists between the tenantry and the landed proprietary in this county, and not only in this county, but throughout the northern part of this kingdom, where land is let in a fair and proper manner. Different systems have been adopted in different parts of the country, as different cures are prescribed for different diseases; but Morayshire will rank well for the manner in which the land is let with any part of the British Empire. Constituted as the times are, we have to rub shoulders with our tenantry far more than we were doing. We ought to be amongst them, taking an interest in their leases, in their stock, in their turnips, in their grain, and in many little things in connection with their farming that they wish to let us know; for I do not mean that we should always be going about spying what they are doing; but fair, free, open, honest contact as prevails in this county is, I am sure, for the benefit of both. Not long ago, I heard Mr. Harris say that the tenantry had reason to be proud of their landlords. I would cap that by saying that the landed proprietors have reason to be proud of their tenantry. Talking to the tenantry, I may be allowed to congratulate you upon your pleasing prospect of prosperity during the winter. What with barley at £2, oats at I know not what, wheat rising so rapidly in value, and our worthy friend, Mr. Macdonald, unable to write the names of competitors for prizes for turnips, because they come so fast and thick upon him, I think that the winter promises well for the tenantry of the country. I may hope that, when the stormy blasts of winter are past, you may meet in every way satisfied with the result.

Mr. **Geddes** said Sir George had drawn a remarkably pleasant picture of their prospects. He could tell them that this year the tenantry would have enough to do to make up for the losses of the past two years. It was quite true they had a very great deal to do in the last two years, and if it had not been for the energy and honesty for which they got credit, they could not have carried on their live stock and occupied their land. They did not complain, nor cry out for a reduction of rent, but on the contrary they said they had made their bed and would lie on it. Putting a stout heart to a stey brae, they resolved to carry themselves through. But this year had come round to save them from the losses they sustained on the previous two, and he was sure if there were any gentlemen who would congratulate them upon that, it would be the landlords of Moray. They were not arrogating too much to themselves when he said they had reason to be satisfied with their position in Morayshire, and he thought the landlords had no reason to be ashamed of their tenantry, because he had travelled over the greater part of Britain and was always on the move, and had never seen a part of the country where more had been done for the fertilisation of a poor soil. They had spared no money for the fertilising, as well as bringing good stock into the country. He hoped the proprietors and tenants would always meet on the same friendly terms as they were doing now.

The Duke of **Richmond** said: I have a toast to propose. It is to the health of the croupier this evening. It is because I have known him as a friend and as a tenant that I have the pleasure to do so. If I had any doubt on this subject, I might refer you back to what took place probably in this very room, at all events among the members of this Club not long ago, which would dispel all doubt on the subject, because in consequence of the service which had been rendered by him to this Club, and to the agriculture of the county, a testimonial was presented to James Geddes, Esq., of Orbliston; and if among your friends and neighbours you are able to retain a good name, you may depend upon it in ninety-nine cases out of a hundred it is deserved. I have the satisfaction of holding him as one of the oldest tenants on the Gordon estates. Gentlemen, he has told you that he has witnessed farming in all parts of the country, that he is continually on the move; and why is this? It is that his opinion is so good that he is perpetually asked to be referee in important cases; and I think there is no case in which a man may be prouder than when he is invited to act as a sort of middleman between disputing parties—disputing, it may be, friendly; for I do not say it is always in a hostile manner.

Mr. **Geddes** said: It is quite true that I have had the honour of knowing his Grace for a period of thirty years, and during all that time I have met with nothing but a series of kindnesses—not that kindness which is seen of men, but private acts of kindness. He has shown to me in all he has said, and as his father did before him, that he was not speaking merely as a landlord to a tenant, but he has on every occasion that he had it in his power shown me the kindliest feelings, and consulted the warmest affections of my heart in all that he has done to me; and in doing so, he was only giving expression to the high and noble character which the Dukes of Richmond have always held in the country.

ON DRYING GRAIN ARTIFICIALLY.

With the recurrence of each wet harvest, such as that of this year, there are repeated calls for some practical method of drying grain. Nevertheless, no process for the purpose seems to be of that general adoption which is the stamp of success. It is generally known that most organic bodies, if once well dried, can be kept in that state for an almost indefinite period. The moisture being once driven off, it no longer acts as a mechanical furtherer of decomposition by keeping the pores open, and chemically by, according to Berzelius, the hydrogen exerting its affinity for the nitrogen, carbon, and the other elements. There are well ascertained instances of grain in large quantities being kept even for centuries in a dry state, and of its retaining, not merely its germinating, but also all its edible, qualities. As might be expected on reflection, the absolute weight of grain is diminished by the amount of moisture evaporated; its specific gravity being, on the other hand, necessarily increased. On being made up into bread, however, this weight is recovered, as the dough re-absorbs a large proportion of water while being kneaded up. Grain is a highly hygrosophic substance, having a strong tendency to equilibrate the moisture it contains with that of the surrounding atmosphere. Grain, in fact, naturally contains sufficient moisture to predispose it to fermentation. On the other hand, the process of drying not merely gets rid of this inherent moisture, but apparently so hardens the external epidèrmis that it acts as a casing for the inside. As regards storing properties, dried grain is thus even more favourably circumstanced than seasoned wood. Besides these advantages, a good process of drying would cause the destruction of the germs of the numerous animal and vegetable parasites peculiar to wheat, and the development of which is found to follow step by step the advancing stages of fermentation. This insect life requires for its development the high temperature produced by fermentation; and the wheat-fly, the weevil, and other insects cannot multiply in the low temperature of dried grain. These general observations apply to the grain resulting from an ordinary harvest, but they bear with tenfold force on a wet crop, or wheat wetted in the transit on board ship. Thousands upon thousands of bushels of wheat are stated to be thus annually damaged and spoiled on the American lakes and canals. As it is impossible to store wet grain, and as tolerably dry grain has a continual tendency to re-absorb moisture, the plans for storing it all resolve themselves, more or less directly, into plans for drying and keeping grain in a state of dryness. It generally begins to ferment and decompose from the centre of a heap, the outside being kept dry by the continual renewal of the air. Thus, the plan adopted in many foreign military granaries is to shake up and move about the grain with shovels. More economically, the same process is carried out by constructing the store-house in a peculiar way, by which, after the mass of grain has been lifted up, it is allowed to fall by gravity, or by means of mechanical stirrers. The late Mr. Bodmer, when at Manchester years ago, brought forward a plan of the latter kind, which is described in the *Journal of the Society of Arts* for 1846 (p. 41). Its leading idea consists in the use of an endless scoop, which can be traversed through the grain. Many other means have been brought forward at different times as substitutes for the employment of hand labour to stir up the grain; amongst these are plans for storing the grain in hollow columns, or in hoppers placed one above the other on revolving cylinders—all, in fact, for putting the grain in motion against the air by some more economical means than hand labour. An old idea, often revived, is to inject a blast of cold air amongst the grain, mechanically—the reverse process to a bodily stirring up of the grain. The most ancient mode of storing grain in southern climates consists in placing it in peculiar subterranean holes, termed *silos* in French and Spanish. Being under ground, the grain is kept a low and unvarying temperature throughout the year, and beyond the reach of the attacks of insects. If stored in a fair state of dryness and freedom from the eggs of insects, this immemorial plan is found to keep the grain sound for ages. Amongst the chemical means brought forward in France for destroying insect life in grain may be mentioned the injection of chlorine and sulphurous acid gases (1805); and also (1845) carbonic acid gas. In 1852 chlorine gas was again proposed, and a patent taken out for the notion (June 18). These chemical fumigations, besides being expensive and difficult to apply, must often injure the grain and affect the taste of the flour and bread from it. What may be termed the mechanical means are evidently all founded on the broad principle of drying, and of keeping the grain dry, by blowing away the moist air as much as possible. This renewing of the air is also in a great measure obtained in the common methods of storing the grain in separate sacks kept apart from each other, or by laying it in thin layers with furrows—both plans evidently taking up a large amount of room. Returning to the numerous processes tried at different times for drying grain artificially, we find that one great difficulty must consist in the fact that a single grain is a bad conductor of heat, and that this non-conductibility is necessarily increased in a mass by the layers of air between the grains. Heat directly applied to a heap of grain might destroy its germinating properties, and even char the grain in immediate contact, without driving off the moisture or destroying the insect-life of the grains further off. It would appear from some experiments in France that the germinating properties of grain are destroyed at about 70 deg. Centigrade. A few degrees within this amount insect-life is destroyed; and the heat can be carried up to within 100 deg. Centigrade, or boiling point, without injuring its bread-making qualities. Another difficulty to be met is the getting rid of the moisture which exudes, and to an amount varying with the nature of the grain, as with hard and soft wood. As the heat is increased, the grains sweat in proportion, the air gets saturated to the degree proper to its temperature, and it has to be driven off, and the grain cooled down. An artificial drying apparatus of general applicability must thus satisfy the conditions of keeping the temperature at least within boiling point; of equally heating the whole mass; and of getting rid of the steam evolved from the grain itself. The French, with their great military and naval storehouses, seem also to have given the most attention to means for artificially drying grain. Of late years some very ingenious plans for this purpose have also been brought forward by the Americans. A great number of different machines and processes have been at least patented in this country, where it is but seldom that grain can be dried, as in southern climates, in thin furrowed layers under the rays of the sun. A general view of all these plans shows that they all come under the heads of (1), getting rid of great moisture by centrifugal force; (2), applying a very high temperature by the use of stoves or kilns; (3), employing the desiccating action of—(*a*), heated air; (*b*), steam, or superheated steam; or of (*c*), air dried by exhausting it through either lime or chloride of lime, all in direct contact with the grain; (4), employing the drying action of a metallic surface heated by means of hot air, or steam, or superheated steam, or gas, or hot water.—1. The centrifugal or hydro-extractor plan is rather a mode for getting rid of the water from grain that has been washed than a means of absolutely drying it. It can evidently only get rid of the surface water. Large fortunes, we may here state, have been made in England by people who have bought up cheap and dirty Egyptian grain, and, after washing and drying it, have sold it at a rate more than covering their expenses. The stove, kiln, or retort process for drying grain is embodied in comparatively few English patents. A recent modification of this mode is that of M. Dutarbe (No. 1,589, A.D. 1861) who takes four cylinders, furnished with metallic webs fixed at one end in a large platform of wood, which he causes to revolve in a brickwork drying chamber with a chimney for the escape of the vapour. Employing a kiln for this purpose involves much preliminary expense, and requires much room; while, if the grain be not well stirred up, it is unequally heated. A mode tried some years ago in France was to heat the grain in sacks placed in a kiln, and afterwards emptied out in a heap. The grain thus got too much heated at the outside, and too little at the centre. The main difficulty in using a kiln seems to be that of keeping the heat given out from a furnace at a determinate point. In such processes as malting grain a kiln is generally employed; but the requirements here are distinct from those in which grain is to be used for making bread. The third mode into which we have divided the numerous more or less successful attempts at arriving at a practical process for the purpose may itself be roughly divided under three heads: (*a*) Wherein the grain itself is moved against the desiccating agent; (*b*) in which the desiccating agent is itself in action and injected into the stationary grain; (*c*) in which the above two principles are combined together. Under the first head come No. 97, A.D. 1853; No. 614, A.D. 1856; No. 2,845, A.D. 1857; No. 2,364, A.D. 1858. They have not been successful, and the use of heated air for the purpose is now very properly combined with a movement of the grain itself, as under the third head. Injecting the fluid desiccating agent, whether air, steam, or dried air, into the stationary grain, is embodied in patents Nos. 11,947 (1847); 1,489 and 1,882, A.D. 1855; No. 2,632, A.D. 1857; No. 1,530, A.D. 1858; and No. 2,179, A.D. 1860. The injection of steam has been patented in No. 1,436, A.D. 1861, and carbonic acid gas with heated air in No. 1,288, A.D. 1855. The injection of carbonic acid, sulphurous acid, or similar gases into grain, is rather a mode for killing the parasitic insects than a preservative measure. The use of steam is in so far absurd as, if at such a pressure as to be able to force itself through the grain, it would cook the gluten; while, at a low pressure, it would get condensed, leaving the grain in a worse state than before. A recent patent (No. 2,127, A.D. 1865) by Mr. Bulkley, is an instance of the impossible, it seems to us, direct application of steam to drying grain. There is no record of its ever having been tried in France. The use of air dried by chemical substances is only limited in its action; besides being probably rather expensive to carry out. Bringing heated air into direct contact with grain has to encounter the difficulty that, its pressure being very slightly raised at a temperature of 212 Fah., it could not be forced into a heap by its own pressure. Amongst the recent plans in which the grain is kept almost stationary is that of M. J. Perrigault (No. 2,789, A.D. 1861), who places the grain to be dried in a case with shelves of perforated plate. At the top is a hopper, and below a shoot. A fan, placed at the upper part, exhausts the hot air into the casing from a stove. In 1863 Mr. Weems patented (No. 2,602) some improvement in his plan of 1855 (No. 1,489), in which the grain was laid in layers upon a perforated floor, heated air being forced through the perforations and thence through the grain. Mr. Creasy (No. 3,276 A.D. 1865) employs two fans, one to inject and the other to exhaust heated air through grain placed within a casing formed with perforated partitions.—*The Engineer.*

PULPED ROOTS FOR STOCK.—On the value of the process for a grazing farm with but a small quantity of plough-land, Mr. Corner, of Woodlands, Holford, Bridgewater, thus speaks: "My plan is, first commencing with the grazing beasts, to cut about an equal quantity of hay and straw, and mix with a sufficient quantity of roots (mostly mangel) to well moisten the chaff; and as the beasts advance in condition I lessen the straw and increase the hay, and in their further progress I mix—in addition to all hay, chaff, and roots—from 6 to 10lb. per day to each bullock of barley and bean-meal, according to its size—and I have them large sometimes; I sold last week for the London market a lot of Devon oxen, of very prime quality, averaging in weight upwards of 100 stone imperial each. For my horses, cows, yearlings, and oxen—the latter to be kept in a thriving condition, and turned to grass, and kept through the summer for Christmas, 1860—I cut nearly all straw with a very small quantity of hay, and this the offal of the rick. These also have as many pulped roots as will moisten the chaff, except the horses, and to them I give, along with bruised oats, just enough roots to keep their bowels in a proper condition. To the two or three-year-old beasts I give them some long straw and a part chaff, and the offal (if any) of the food of the above lots of stock. My farm is but a small one—under 200 acres. My predecessor always mowed nearly all the pastures for hay, which is about half the farm, and with this scarcely ever grazed any beasts, and kept but very few sheep. Since my occupation I scarcely ever exceed ten acres of meadow with one field of seeds for hay. I keep from 250 to 300 large-size Leicester sheep, and graze from 20 to 25 large-size beasts a-year, with other breeding stock in proportion. I consider the pulping of roots is better for fatting pigs than anything else. My plan is to have a large two-hogshead vat as near the pulping machine as possible, so as to fill it with a malt-shovel as it comes from the machine; as the same time I keep a lad sprinkling meal (either barley or Indian corn) with the roots, and this is all done in 15 or 20 minutes; it is then ready for use to be carried to the pigs in the stalls alongside the fatting beasts. I never could fat a pig with profit until I used pulped roots."

AGRICULTURAL MATTERS IN SUFFOLK.

At the annual dinner of the Lavenham Farmers' Club

Mr. BIDDELL remarked: No person could dispute that there was now a rock a-head, and, although it had proved fatal to many Governments, he hoped the present Administration would not turn from it, but face it. He hoped they would not forget the malt-tax, and not aggravate the pressure which this harvest was exercising upon the working classes by taxing the barley from whence *should* come their beer, though very often it did not come from it.

Major PARKER, as to the malt-tax, hoped that the period was not far distant when that question would receive a solution more satisfactory than it had hitherto done. With the varied qualities of barley, though prices of the better kinds were very remunerative, it was the inferior qualities that sorely pressed upon those who had not had the good fortune to harvest their crops in so good a condition as others. As to the cattle-plague, noticing its ravages, he said it might now be considered to have disappeared.

Mr. E. GREENE said if he took the liberty of speaking upon the subject of practical agriculture, he hoped they would consider he had some right to do so when he told them that he was himself a farmer of 600 acres of land. In the present day it required the utmost attention, the greatest vigilance, and the wisest possible way of laying out their capital, to make farming remunerative. It was quite true that they were at present receiving very remunerative prices; and he might say that once in every seven or eight years there was a turn of that kind that helped one over a bad year. It was impossible to say what the price might be a few weeks hence, and it would not do to farm upon the basis of high prices. How then were moderate prices to be met? First he would say, "Grow no grass." There was nothing so expensive as growing grass on their arable land. They must make up for any deficiency in manure, and it would pay to use a portion of an artificial fertilizer in order that they might grow a full and proper crop, because there was very little more expense in harvesting five quarters of wheat per acre than three or four. He was quite aware that steam cultivation was not practicable in small fields, and from what he had seen in that neighbourhood he thought the fields were too small. He had seen both systems of cultivating the soil by steam. The one employing two engines was, he thought, the best; but of course the objection to it was the large outlay of capital it involved; but still he was of opinion that that was the principle for heavy land. He would tell them what he was able to do with his engine, adopting the system of ropes and porters. This year, treacherous a season as they had had, he had been able to cultivate and plough more than 100 acres of land, which he could not have done with horses. Having the power to do it quickly he did it when the weather was dry. Calculating the interest upon capital, the wear and tear, and all the expense, he could cultivate cheaper by steam than he could by horses, and he had the advantage of being able to do it when other work was going on. There need be no fear that ordinary labourers were unable to do it. If he gave the order to his men to cultivate 40 acres of land, and went out for three or four days, when he returned he found it was done, as they did 10 acres a-day. The way to do it was to put the work out to the men. They had heard a great deal of talk about the labouring man, but he contended that labour was a marketable article. They had got into a very different state of things to that which existed when the population was overburdened. The demand was now for labourers, and not for labour, and the man who had labour to sell could generally find a market for it. But he believed there was one thing of more importance than any other to the labouring man, and that was a proper cottage to live in. He said it was a burning shame that such wretched dwellings as they had in this county should be permitted to continue. He also said a farmer must have a horse to ride to market or a mare to drive, and now and then he would breed from her, and for this purpose they would use any brute of a horse that came round, with neither action nor family to recommend him, and they availed themselves of him just because he passed their gate. He wanted them to remember that a good horse eats no more corn than a bad one. A good stable of horses ought to cost them no money—indeed a farmer who hunted ought to make a hundred pounds a-year of his horses; and he might tell them that he had himself in his younger days had many a stable of horses that never cost him 2d. Mr. Biddell had touched upon the subject of reform. He did not agree with those men who induced the working man to think that some great boon was to come to him in the possession of the franchise, and that when the Reform Bill is passed he need work no more (Hear, hear). They might depend upon it, there was no royal road to success in anything. Without industry, perseverance, and uprightness of character it was impossible to succeed. No man desired more heartily than himself to see it settled, and the electoral franchise enlarged if need be; but let it be done on constitutional principles. It was his belief that agriculture would rise out of its difficulties, but depend upon it it could only be done by a thorough cultivation of the soil. They could not be expected to farm against losses, but they all knew that a well-drained and deeply-cultivated field would stand against bad seasons better than one that was not so well cultivated.

Mr. MUMFORD said he supposed Mr. Greene's allusion was to twitch or spear grass. He did not see any probability of getting rid of that, because good cultivation would not pay without close cropping, and they never could get time to eradicate this grass. It was, however, very certain that it never could be got out of the soil without some powerful implement, and they must also have a powerful machine to draw it. As to their fields being too small for the use of the steam-cultivator, it might be done by a little contrivance, in the same way as Mr. Wright had recently been enabled to drain several fields by steam power without removing the engine. He was certain they would be in a better position to grow corn in competition with the foreigner if they could get the advantage of this implement. He had suggested to those who supplied them with steam-power for thrashing that they should procure the apparatus and let it out in the same way, but they seemed to think it was a speculation that would not answer their purpose. That might be a very good reason for their declining to do it, but it was no reason why the farmers should not endeavour to apply steam-power to the cultivation of their farms; and he thought if five or six men living in a neighbourhood would combine together they might purchase the apparatus without any ruinous expense. He believed the time would come when steam-ploughing would be as general as steam-thrashing.

Mr. GREENE, as to spear grass, knew of no man in the county who was a better farmer than Mr. Kersey Cooper, and he would venture to forfeit £20 if on the whole of Mr. Cooper's occupation of 800 acres a tumbril-full of spear grass could be found. He believed it might be eradicated by steam cultivation.

Major PARKER said the subject had been uppermost in the minds of the Club for years past; whereupon

Mr. GREENE said, Then they had talked about it long enough, and now he would advise them to act.

Mr. R. HAWKINS referred to the course taken by the Earl of Leicester for improving the cottages upon his estate in Norfolk. His Lordship stated at a recent meeting at Docking that 900 men were required to cultivate the land under his tenantry, but he had dwellings for only 400—well-built and excellent cottages—the remaining 500 being men who could not be depended upon, who were here to-day and gone to-morrow, and it was difficult to provide accommodation for them. His Lordship had established dwellings on a great part of his estate at a cost of about £110 each, the tenant paying the cartage. Why they had not better house accommodation for the poor was that 50 years ago the landlords were glad to get the poor out of their parishes, and, accommodation being restricted, they went where they could. In some cases small plots of ground had been built upon by speculators, but the rents demanded had converted them into pest-houses rather than cottages, there being in many cases a whole family living in one room. He was glad to see Lord Leicester had taken the matter up, and, if other landlords would build upon the same system, tenants would gladly pay £5 per cent. upon the outlay, provided they were allowed to chose the occupants of the cottages.

Mr. J. GARDINER spoke at considerable length in favour of the repeal of the malt-tax. With regard to the argument that the money could not be spared, he said it was not for the advocates of malt-tax repeal to point out the means of making up the deficiency in the revenue, but he suggested that a tax of 2d. a gallon on beer would bring in an amount equal to the malt-tax. He also alluded to the question of steam-ploughing, and observed that Mr. Greene was at present but a young hand, and he should not be surprised if in the course of a year or two the expenses of wear and tear and repairs were found to be so heavy that he would be a good deal less sanguine upon the subject of cultivating by steam. He (Mr. Gardiner) had not yet seen the system of steam-cultivation that could be economically applied to the tillage of the soil.

BRAXY IN SHEEP.

As we have recently had various letters of inquiries regarding braxy, or the sickness in sheep, instead of replying to these individuals, we devote the following article to a short notice of the disease. Braxy, from *brac* or *broc*, meaning a sickness or distemper, is sometimes loosely applied to any rapidly fatal ailment of sheep. Thus generically used, it includes many various disorders, such as inflammation of the bowels, diarrhœa and dysentery. But, in a more limited and correct sense, the term braxy is applied to a congestive febrile disorder, analogous to blackleg, anthrax, or splenic apoplexy in cattle. It is essentially a blood disorder, consisting, like these analogues amongst cattle, in impaired circulation, in congestion, and in outpourings of the serous and colouring portions of the blood. As in quarter-evil, the congestions and subsequent extravasation of blood are sometimes located about the head and neck, or the back and loins, or are mainly confined to the internal organs: hence in great part arise the variety in the symptoms, and the confusion regarding the nature of the complaint.

CAUSES.—The causes of braxy are somewhat numerous and diversified; but all appear to act prejudicially by producing stagnation of the circulation, over-distension and rupture of the capillary blood-vessels, with consequent escape of their contents. Amongst upland flocks, cold wet weather and exposed pasturages are notorious for bringing on braxy. It prevails especially in hard winters. The surface of the body is chilled; secretion is impaired; blood imperfectly purified thus accumulates internally, and is outpoured within the bowels or chest. In like manner, the old-fashioned practice of allowing sheep to gorge themselves with as many roots as they can devour, lowers the animal temperature and vitality, and is apt to induce braxy, especially when such a wasteful amount of cold watery food is given in winter weather and to weakly sheep. The eating of dry, hard, indigestible food, the scarcity of water, or other such causes, developes constipation, which is very prone, especially in a weakened frame, to interfere with the elaboration of healthy blood and with its regular circulation. Lambs, perhaps thriving well enough throughout the summer, frequently suffer as autumn advances, from the grass becoming deficient in nutriment; their progress is often further checked by their transfer to roots or other winter food, and in this weakened condition cold, constipation, or an attack of scouring seriously disturbs the circulation, and gives rise to stagnation. Lowland flocks sometimes suffer from braxy when food is most abundant, and the sheep are being forced with rick feeding stuffs. Blood, probably imperfectly elaborated, is thus manufactured more rapidly than is necessary for the requirements of the system; and if the animal has been growing rapidly, or its structures are otherwise weakened by any previous check to thriving, impaired circulation is apt to lead to fatal extravasation. It is popularly believed that the moon has much influence in the development of braxy. In an excellent article on the subject in "Our Domestic Animals in Health and Disease," Professor Gamgee thus rationally explains this lunar influence: "The shepherd well knows that, with a full moon, he always has a lot of trouble with the sheep. They rove about and stray; and they do not, as on dark nights, lie down, rest, ruminate, and digest the food they have collected during the day: the reverse happens; for with greed peculiar to it the sheep gorges itself to repletion, and when morning arrives is found struck down by the most fatal braxy" (p. 294). Although often suddenly seizing many individuals of the same flock, the disease is not contagious, neither does it appear to be producible by inoculation. The flesh of sheep suffering from and even dying from braxy is eaten with perfect impunity; indeed, "braxy hams" are much prized for their tenderness.

SYMPTOMS.—The animal is dull and languid, but very feverish; the eye is bloodshot; the mouth hot; the pulse full and strong, afterwards becoming oppressed and indistinct; the breathing hurried and laboured; the bowels constipated; the urine scanty and high coloured; the fleece dry and clapped; the gait unsteady, as if the limbs were partially paralysed. In a later stage the animal lies panting and pulseless, a frothy bloody discharge issuing from the mouth and nostrils. Occasionally there is abdominal pain, tympanitis, and symptoms of colic. Invariably the blood, if drawn, is found to be dark coloured and thick, being aptly likened to tar. Sometimes the stagnation and extravasation, in which, as already stated, the disease consists, is located, as in many cases of quarter-evil in young cattle, in the loins and extremities. In such cases, tenderness and a crackling swelling are discoverable along the back and sides, and the sheep do not die so rapidly as when the internal organs are more particularly implicated. A sheep apparently in good health is seized and dies sometimes within three or four hours; more frequently he lives for ten or twelve hours, and if he survives twenty-four hours there is reasonable hope of recovery.

The carcase passes very rapidly into a state of putrefaction, speedily emitting fœtid gases. The blood is dark coloured, thick, and forms only very slowly a soft friable clot. The skin is dark coloured, and its bloodvessels are turgid with black blood; the subcutaneous cellular tissue is usually filled with gas and a little serum. The stomachs are distended with gas, and the third stomach in particular contains dry, hard, imperfectly digested food. The stomachs, and still more notably the bowels, are congested, without and within, their bloodvessels standing out distinctly injected with purple blood; underneath and within the mucous membrane of the intestines are patches of extravasation sometimes of a few inches in extent, sometimes covering several feet of the gut, and exactly like the extravasations occurring in inflammation of the bowels amongst heavy horses. The liver and spleen are congested; the lungs are likewise discoloured and spotted with stagnated blood, and even the heart itself is similarly mottled. Except in cases that have survived for several days, there is no appearance whatever of inflammation; neither in the bowels nor elsewhere are there any traces of exudation of lymph.

TREATMENT.—So sudden is the onset, and so rapid the progress of braxy, that there is seldom time for treatment. Before there is the suspicion of anything amiss, the sheep is often dead, or dying. But even where the earliest symptoms are detected, treatment is of little avail, probably because the blood is already in a hopelessly faulty state. Even under favourable circumstances as to the early detection and prompt treatment of the disorder fully five-sixths of the sheep affected die. If the pulse can be felt, and the animal is still able to stand, a few ounces of blood should be drawn from the vessels of the tail, the ears, or perhaps most conveniently from the vein of the face. Often, however, the blood is so thick and inspissated that it will not flow. When the animal is pulseless, prostrate, or unconscious, the over-loaded vessels have been already relieved by internal bleeding, and any further abstraction only hastens a fatal termination. The torpid bowels must, if possible, be acted on. A few ounces of Glauber's, Epsom, or common salt, or a mixture of any two of them should be given in water; or two or three ounces of castor-oil substituted; whilst with either the salts or oil should be administered an ounce of Mindererus spirit, which will help to act on the skin and kidneys, and perhaps also exercise a solvent action on the blood. The Mindererus spirit in half-ounce doses may be repeated every two hours, and given in water with ten grains of the sulphite of soda. If the animal is exhausted and dull, a little warm ale, spirits and water, or small doses of liquor or of carbonate of ammonia, may prove serviceable. The sheep, if possible, should be made to move about every two or three hours, and ought to be placed in a comfortable shed or box.

Prevention is more important and fortunately more attainable than cure. The flock should always be kept thriving steadily. Any check to progress is not only a wasteful loss of time, but likewise affords great liability to braxy, and, indeed, to many other diseases. During weaning, during the autumn months, when the grass is less nutritive, and whilst changes are being made in the food of the sheep, especial care is required to keep the animals thriving; and at all such times a little cake or other such concentrated food is a most valuable sustainer of health. On the pastures and in the turnip-folds, rock salt should be supplied in small covered troughs. When a few cases of braxy have occurred in a flock, a careful examination should be made of the feeding and general management, any shortcomings and errors avoided, liberal supplies of roots considerably limited, dry food used more freely, a little cake (if possible) allowed, and a mess of bran, brewers' grains, or other such food given twice or three times a week with a little salt, nitre and sulphite of soda mixed with it, the nitre and sulphite of soda being in the proportion of a scruple each to every sheep.—*North British Agriculturist.*

MANUAL LABOUR AND ITS RELATIONS TO AGRICULTURE.

On Tuesday, Nov. 6, Mr. Charles Belcher, of Little Coxwell, delivered a lecture at the Faringdon Agricultural Library, on the above subject. The chair was occupied by Mr. G. F. Crowdy. Mr. BELCHER said: Manual labour in relation to agriculture is the subject we have met to discuss today. It is one that is closely connected with the business of every farmer—whether his occupation be confined to a few acres or extended to many thousands; therefore I hope we shall all dispel ideas of a formal lecture on this occasion, and determine to offer freely to this meeting the opinions we have formed, as the result of our thought, observation, and experience, on the matter in question. It has fallen to my lot to begin; and I purpose, in the few brief remarks that I shall make, to refer to the past, the present, and the future; and I think it will not be out of place if I add a few words on the much-debated subject of hiring and hiring-fairs. *The Past:* I am old enough to remember the times gone by, when agricultural labourers were greatly in excess of the demand for them—when the words, "surplus population" were frequently heard—when plans for emigration were made, to draw to other countries the strong and sturdy labourers that could not obtain employment on their native soil—times when spade husbandry was recommended, and allotment gardens were planned and set on foot, for the purpose of employing the strength, the bone and sinew of the men who were frequently seen in the market places of the towns, and in the streets and lanes of our villages, "standing all the day idle" because "no man had hired them." Those were days when arrangements were made in parishes for some of the men who had no regular work to go from farm to farm, to be paid at a low price, and put to any work the farmers thought proper, that the parish rates might be kept down, and something had in return for the maintenance the law compelled us to give. Men at that time were sent in gangs, and told to work on the roads where there was no one to superintend them, and where their time was frequently worse than wasted. Their weekly pay was then gradually doled out to them, and received without thanks or gratitude. Those were times when a man received at the end of a week's work scarcely enough to keep body and soul together; and the labourers' children had few schools to go to, but spent their time in petty pilfering and pulling the hedges for firewood; their clothing, too, consisted chiefly of the left-off garments of their richer neighbours, regardless of material, colour, shape, or fitness. Picturesque, animated scarecrows they were, but at the same time objects of pity to all who had hearts that could be pained at the signs of want and misery. In those days an unmarried man usually received lower pay than one who had a wife; and the man who had a large family could go on a Saturday night to the overseer, make a report of the number of his children, and demand of the parish officers a certain sum per head, to add to his wages and make the total amount equal to what the district magistrates considered enough to keep them all above starving point. They were times when a horse-power thrashing machine was looked on by the labouring man as a formidable rival in the labour market, and their dislike to machinery at last grew so strong that they banded themselves together, committed acts of violence, smashed some of the thrashing machines to atoms, and in many places lighted up the flames of the incendiary in the stack-yards of their employers. Those were times when agriculture had not advanced so far as to show that heaths and commons could be profitably cultivated by a judicious application of labour; or if it was known to the few, still there were impediments in the way, such as the tithes, the game, and the tenant-at-will system; there were also many other obstacles in the path of improvement, but time will not allow us to particularize them; enough for the purpose to say those days are gone, and with that thought we may couple the hope that "we may never see their like again." *The Present:* As a contrast to the past, we know that in the present time no honest, steady man, who is able and willing to work, need be long without employment. Year after year there is an increasing demand for farm labourers; in fact, in nearly every department of labour the general remark is, More work-people are needed. I do not say that in the dead time of winter, men who prefer chance piece-work to steady regular employment do not sometimes find difficulty in obtaining a new contract; but the contrary is generally the case. I suppose that in no time past was the expenditure for manual labour in connection with agriculture so great as now; and although much has been said and written about the low rate at which farm labourers are paid, I believe it might with truth be asserted that farmers, after deducting rent and taxes, give their work-people a greater share of the net returns of their business than manufacturers, or any other employers of labour. As I remarked just now, there is an increasing demand for labourers: the clearing of woods and forests, the removal of hedge-rows, reclamation of heaths and commons, the culture of land that formerly was considered worthless, extensive works of drainage and irrigation, additional care in the cultivation of green crops, all combine to increase the demand for labourers, while at the same time many are drawn away to employment elsewhere. In the cities and towns building is rapidly progressing—works for sewage are being carried on—roads are improved—manufactories are extended and multiplied—the railways absorb thousands and thousands of work-people—mining operations are pushed forward—commerce increases—ships are multiplied—the tide of emigration grows stronger and stronger, and the true working man is now in a far different position to that he formerly occupied; for now he may, from many would-be masters, select the one that suits his inclination, instead of, as formerly, anxiously wait to be selected from the many seeking work to do. All this is experienced at the same time that machinery of all kinds to economise labour is in free use. Let me ask in what state would agriculture now be, without the steam thrashing machines—without the horse-rakes, the horse-hoes, the scarifiers, and root-pulpers, the chaff-cutters? In what state would agriculture be, without the grass-mowing machines, and without the reaping-machines? And yet, with all these means and appliances in operation, what was the true state of many districts during the recent hay-time and harvest? Why, grass on thousands of acres was standing uncut in the fields long after it might have been safe under the thatch, had it not been for the lack of labourers. Thousand of acres of barley and other grain lay rotting and spoiling on the land long after it might have been in the barns, if labourers enough could have been engaged to gather it together. I will mention an instance—I doubt not all of you could tell of somewhat similar cases. I have a friend—a Hampshire farmer—a liberal paymaster; he told me that last year he had one thirty-acre piece of oats fit to cut, and he could only spare one man for the work; that one man mowed sixteen acres before he could have another to help him. The consequence was, that the estimated loss of corn that fell out on the land and was wasted was one quarter per acre—probably in value equal to the rent of that piece. Let me ask another question; your answer will perhaps prove the correctness of much that I have stated. Is there a farmer in this room who would not gladly have employed more labourers and paid them well during part of the present year, if he could have obtained them? Further—is there a farmer in this room who was not obliged to leave undone, or postponed, some work on his farm simply because he could not, at the proper time, obtain a sufficient number of "hands" to do it? *The Future:* What remedy can be brought to bear; what means can be adopted to enable us to do more farm work at the proper time, and thus prevent loss, waste, and disappointment! My opinion is summed up in a few words: "The more extensive use of machinery;" and should the case be met in that way, what effect will be produced? I answer, to the country generally, a saving of much that at present is wasted in the field. If we by the aid of machinery increase the quantity of grain and hay secured in good condition, it will show itself again in increased supplies of beef, bacon, and mutton; common material things though they be, they are not altogether unpalatable to Englishmen; and if our supplies of these good things can be increased, who will be benefited? All, but more particularly agricultural labourers, and those who at present get but a limited and meagre supply. I once heard of a gentleman of this neighbourhood who told the members of a benefit club, just before they commenced their annual dinner, that it was fortunate that rich men could not eat more than poor ones; for if their powers of consumption were not limited, they would eat up all, and there would be none left for poor men. I do not agree with him, in thinking that the upper classes would if they could prove themselves to be like Egyptian locusts; but I repeat my opinion that a more extensive use of machinery will be more beneficial to the so-called lower classes, than to those who at present have abundance and to spare. Again, the labour market, like all other markets, is regulated by supply and demand—a brisk demand, coupled with a small supply, must result in a higher price, and so it has been proved; all manual labour costs more than it did formerly. Will not a good result also show itself in the following way?—that in the future, a good, steady, sober, skilful labourer, will be more likely to have a suitable and comfortable habitation provided and offered to him, near to his work, that his home comforts may help to make him more inclined to retain a good situation? and if so, cottage improvement must go on as a work of necessity. I trust that the future time will show to us, not only here and there decent habitations springing up, the work of benevolent and philanthropic individuals, for if we depend alone on such good people for cottage improvement, the work will progress at a comparatively slow and dragging pace; but let the time once arrive when a labourer can afford to reject a situation, unless a suitable place of abode can be obtained near to his work (not as a gift, but to be rented by himself), then, and not till then, will the miserable hovels we frequently see be swept away, and decent houses erected in their stead. An extension of the use of machinery has, I believe, always been sooner or later coupled with an increased demand for labourers, and a proportionate advance in the workmen's earnings. We cannot enforce thrift and providence on those who have the power of laying by for a rainy day, but we can recommend temperance and carefulness; and I trust that, in the future, drunkenness and its consequence, pauperism, will decline; that young working men will provide for sickness and old age; that, when affliction comes on them, they will not, as at present, be so willing to lean on the relieving officer and the parish for support, but, instead, will be able to turn on their own savings which they collected,

"Not for to hide them in a bank,
Nor for a train attendant,
But for the glorious privilege
Of being independent."

And now, if I shall not be trespassing too much on your time, I will add a few words on hiring and hiring-fairs. I have always considered the system of hiring, or yearly-work contracts, to be good, both for employers and employed, more particularly so in the case of young unmarried servants, for by it is prevented the roving and rambling about from place to place for work. It prevents the uncertainty of the amount of the weekly pay; and surely a regular moderate sum every week is better than occasionally more, or frequently less; and I think if you test the two systems by the results, you will generally find that the hired servant is more steady, careful, and orderly than the wanderer. The hired servant has respectable lodgings to which he retires at night, while the other too often spends his time and his money in those vile, debasing places, the beershops! And when Michaelmas comes, the hired servant receives a few pounds as wages, when the wanderer has often empty pockets and a damaged character. Hiring Fairs: Hiring-fairs have been by many persons condemned in the strongest manner as productive of nearly all the evils that press on the labouring classes; and they almost say that no good can possibly result from these annual gatherings. I do not hold such an opinion; and I have never heard of any proposal likely to work well, and effect the true intent and meaning of a hiring fair. I think that a better plan should be laid down, before we break up that at present in use. I am aware that much evil exists in connection with these fairs; but I would ask, Are there any large gatherings of people, whether the crowds consist of the upper, middle, or lower classes, where unmixed good is found? Registration and advertisements will not answer instead of hiring-fairs. There must be personal interviews between masters and those they wish to engage for their service. Imagine a case. You advertise for a carter or shepherd. Perchance, five or six persons seeking situations appear at your house on the stated day for application. They have walked, some four, some five, some six miles. You engage one; and all the others must walk home again, weary with travelling, and disappointed with the loss of time, perhaps to repeat a similar round, again and again. My opinion is, that a well-conducted hiring-fair affords the only machinery that can possibly work well. I have been informed that at Cirencester, on the fair day, the Corn Exchange is open for all female servants seeking employment, and all persons wishing to engage servants. A small charge is made for admission; and there is none of that crowding and inconvenience, that noise and uproar that is experienced where the market-place is the only place of meeting, and where bawling ballad-singers and shouting showmen make it almost impossible to hear anything but their hideous noises. At some hiring fairs—Wootten Basset, for instance—a committee is formed, and the members meet in the town-hall, or some other convenient place; and there, with book and printed forms, they make an entry of every hiring. These records can at any future time be referred to, by master or servant, should any misunderstanding of the terms take place. Could not similar plans be adopted here with advantage, in connection with our Agricultural Library? I regret that our worthy honorary secretary is unavoidably absent to-day; for I believe his present opinion is against the fairs. If he were here we should have the benefit of his views in full; and if I am in the wrong, I might be put right by his arguments on the other side. Some persons wind up their objections to hiring-fairs by saying they are like slave markets. I see no similitude, except in the numbers; for with us the contract is entered into voluntarily by both parties, but in the case of the poor slave, he is not allowed to say Yea or Nay to any plan of work his purchaser might propose. No, the slave was bought and sold in bondage. Fortunately, Englishmen are free! I come now to other points objected to by many, viz.: the noise of the so-called music, the songs of the ballad singers, the dancing of the lads and lasses, the shouts and laughter of the children, and the irregularity that occurs in going to and returning from the fair. But let me ask again, are there any large meetings of the rich or middle classes of society where there is unmixed purity of thought, word, and deed? Is not poor human nature such that unmixed good is not to be found associated with it? Doubtless much takes place in connexion with hiring fairs that is deplorable, and also much that might be prevented, if fathers and mothers of the young people who go to fairs would go with them, and not leave their children to go where they please, with whom they please, and return home when they please. Before we attempt to put it down, let us remember that the country fair is at present almost the only place, and affords almost the only time, for agricultural labourers to meet their children collectively, and their relatives and friends who reside at a distance. The country fair affords almost the only place where the poor have amusement and recreation, and I would say let us not too hastily rob them of that little. Imagine the case of a poor boy: At a very early age he leaves his home as a hired servant, and goes to a distant farm that is to be the scene of his yearly labours; unlike the sons of men in higher stations, Midsummer comes to him, but for him it brings no Midsummer vacation. Christmas time also comes round, but there are no merry Christmas holidays for him. No, from week to week, from the beginning of the year to the end of it, it is work! work! work! As in that beautiful poem, Blomfield's "Farmer's Boy," the master "never lacks a job for Giles to do." Let us not forget the truth in the old saying, "All work and no play makes Jack a dull boy." Until something better is provided, let him once a year unbend, let him enjoy the amusement of the fair, when it is innocent though rough—everything is not bad at a fair. Could not something to amuse, to gratify, and instruct, be arranged? Some innocent rustic games be introduced, some interesting lectures, exhibitions, or pleasant readings be given, to draw him from the debasing enjoyments that he too often flies to, partly because there is a lack of better things? If the rich have their balls and concerts, their picture galleries, their fox-hounds, and field sports, shall the agricultural poor have nothing of the kind? For my part I should regret to see the abolition of hiring-fairs, unless some well-considered practical plan for the business part could be devised; and I should regret the putting down of the astonishing shows, the shooting galleries, the swings, the throwing at snuff-boxes, the fine-shaped wooden race-horses of the roundabouts, that now cause laughter and merriment, unless something different, as harmless as attractive, could be established on their ruins. I shall now leave the subject to be carried on by others. I am sure you will give me credit for not having advanced anything that is not in accordance with my present convictions; and I will merely add the wish, that where my opinions do not rest on common sense and reason, the foundation may be cut away, and that I and all of you may quit this room with sound and correct views of "Manual Labour and Hiring Fairs in relation to Agriculture."

The CHAIRMAN said that, before he asked the meeting to give the customary vote of thanks to Mr. Belcher for his very interesting paper, it would be desirable that there should be some discussion upon the subject. Mr. Belcher, in speaking upon the question of labour, rather suggested that the way to increase the supply was by the introduction of new machinery. He (the Chairman) confessed he could not quite see that; and he should like to hear the opinion of others present upon that point. If they were to secure an increased supply of labour by the introduction of fresh machinery, it would necessarily involve an increased amount of capital being employed for the cultivation of the soil; and, again, it would involve an increase of wages. It was, therefore, for practical men to say how far these things could be accomplished, in the present state of things, such as the cattle-plague, a bad season, bad times, and occasionally bad prices.

The Rev. H. BARNE then said that on the first part of his friend Mr. Belcher's paper he was not competent to offer any remarks, for he felt that he was not acquainted with the subject so ably discussed; but in regard to hiring-fairs, he would endeavour to put the matter before them as it presented itself to him, as the incumbent of a large parish. He felt himself, when every hiring-fair came round, that on that one day he got the home-work of the year almost entirely undone. The evil produced amongst his parishioners was of the most fearful character; and the drunkenness in the course of the day, the immorality at eventide, when darkness enveloped the earth, and the immorality from the meeting together of the two sexes, was of such a character that he could not adequately put the matter before them. Mr. Belcher had said they never got an unmixed good; but the question was, whether they were not putting a direct temptation before those who were young? There was no doubt that many a young person who had been entirely ruined could trace the beginning of a vicious and profligate life to the hiring-fair in that place; and he was persuaded in his own mind that the plan of hiring servants in this way was very undesirable. He quite felt with Mr. Belcher, that he should like to see the poor have their times of enjoyment; and he (Mr. Barne) would be pleased to see them have their summer-holiday and their Christmas-vacation, as well as others; but, in the nature of things, that was not possible, he supposed. What he (Mr. Barne) suggested was, that they should have two hiring-days; and would it not be possible for one day to be set apart for all male labourers to be hired, and make the second the day for hiring females? By so doing, they would avoid drawing together a mixed multitude, and thereby get rid of a great temptation. If hiring-fairs were to be continued, it became the duty of employers to see that the parents of those who visited the fairs should accompany their young daughters and sons, and watch over them while at the fair, training them up so far as they could in the way that they should go. He could quite understand that these fairs were found to be generally convenient as regarded the hiring of servants; but what he felt was this, that the evil connected with them was so enormously great that it more than counterbalanced the advantages which might be otherwise derived. It was on this ground that he desired to see the hiring-fairs supplanted by some improved system. The registration plan might perhaps be carried out more effectually than it had been; but with all due respect, and with his experience of thirty years in the ministry, he would make his appeal, his respectful appeal, to the employers, that if these hiring fairs were judged by them to be necessary they would use all their efforts to remedy if they could the evil, and that they would take care and endeavour to impress upon those whom they hired the desirability of retiring at a proper time to their homes, and give them an affectionate warning of the evils into which they were likely to be led. They should also use their best efforts to induce the parents to accompany their children, and in that way much evil and wrong doing would be avoided. In conclusion he thanked Mr. Belcher for the spirit and intelligence he had displayed in the paper that he had prepared and read.

Mr. W. C. ISAAC remarked that when manufacturers in our lorge towns required an increased number of hands they found no difficulty in getting them; and he threw out this hint, that if agriculturists would pay a rather higher rate of wages, and also see that their labourers were provided with comfortable dwellings, they would draw back into the country those who were now attracted to the towns in search of employment.

Mr. HUMPHREY felt with regard to hiring fairs that they gave the labourers an opportunity of asking each other what sort of places they were going to, and he did not believe they would like to be deprived of that opportunity.

Mr. PEACOCK had no doubt that the result of a short supply of labourers would be an increase of machinery. He did not have recourse to hiring-fairs for labourers, as he hired married men in his own neighbourhood. He found that the young single fellows were unsettled, and quitted their service whenever they got any little crotchet in their heads. He thought Mr. Isaac's remark was not applicable to agriculture, for manufacturers, when they took a contract for work, knew what would be the profit of their labour; but agriculturists could not tell what would be the result of their labour in tilling the soil. A great difficulty they experienced was to get men to come to harvest work for a month, knowing that at the end of that time they would be sent away. He considered the condition of agricultural labourers was much better than was represented by many persons, and furnished several illustrations in support of his view of the subject.

Rev. H. BARNE mentioned several counties in which no hiring fairs were held, showing that they were not an absolute necessity.

Mr. BELCHER briefly replied; and the proceedings terminated with a vote of thanks to him for his interesting lecture.

THE USE OF ARTIFICIAL FOOD.

The Inverness Farmers' Club, at their annual meeting, took for discussion the question, "Can stock be fed on artificial food so as to pay, and if so, to what extent?" Mr. Kemp, Belnaglack, who opened the discussion, maintained that stock could be fed profitably on artificial food; and in support of his view, adduced the following instances: 1*st*, *Calves*—Before attempting to prove my opinion, it will be necessary to bear in mind that my remarks can only apply to the case of the owner who starts with a well-bred animal. If the animal be not well-bred and healthy, then any effort to make money will not succeed. As a general rule in this part of the country, the calves are fed from the pail; but to me it appears that this is not the best course to pursue. My opinion is that sucking from the cow ensures a stronger animal, and one that will bring most money in the end. And what is remarkable in connection with this plan is the fact that one-third less milk than that which is necessary from the pail will suffice. I cannot explain this; but may it not arise from the milk passing direct into the stomach, and not coming in contact with the atmosphere? When the calf fed from the pail is between four and six weeks old, it will be well to commence artificial feeding. Farmers are not agreed as to the best kind of artificial food, but, as far as my experience goes, nothing is safer or more nourishing than a mixture of ground linseed and rye-meal. But before they are weaned, a small quantity, say a pound and a-half, of dry oilcake should be given, and continued until they are turned out to grass the following spring. At this rate, and assuming that the animal was now fourteen months old, the expense of artificial food would be £1 13s. This sum does not include the value of ground linseed and rye-meal. Here I would remark that the plan I have mentioned, of continuing to give oilcake from the time of weaning until sent out to grass, would be the means of strengthening the constitution, ensuring a rapid growth, and rendering the animal less liable to many diseases prevalent in this country, such as quarter-ill, &c. If to be fed off at the end of two years, one and a-half pound of oilcake and four pounds of grain (oats or rye) should be given during the last three months. If the animal be not fed off until the end of his third year, he should receive no oilcake or grain during his second winter. But every farmer knows that the animal fed off in his third year will, on account of his bones having come nearly to their full size, take on fat more readily, and at less expense, than in his second year, and less artificial food will do. I have known cows fed on hay and five pounds of cake daily, thrive and milk well. 2*ndly*, *Sheep*—Except in the cases of some unfortunate ones, the lambs are all allowed to follow their dams. And what is remarkable in connection with the milk taken by the lamb direct from the udder is that the one-half is found more nutritious than double the quantity of cow's milk given from a pail or keg. I have seen hoggs fatten rapidly on cut turnips and half a pound of oats and half a pound of cake; but this feeding was not profitable, inasmuch as it was too forcing for the constitution, and, in consequence, the mortality was very great. These remarks only apply where there is plenty of other keep on the farm. But where the turnips are scarce, or consumed before grass comes in the spring, then the owner will be consulting his best interest by providing several tons of cake, and giving it before sending out to grass. In such cases, a greater quantity should be given, both to sheep and cattle. 3*rdly*, *Swine*—These are animals to which we pay too little attention, but were we to bestow more trouble on them, we should find them quite as remunerative as either cattle or sheep. What the farmer makes out of the pigs on his farm is like found money; and why? because poor Mr. Pig generally looks after and provides for himself. When kept in the fold and fed on Swedish turnips and a small quantity of oats before selling or killing, they will pay any farmer.

Mr. Gentle, Dell, thought that even if they got their own price it would hardly pay to rear cattle on artificial food. Nothing kept cattle so thriftily as turnips; without them or the staple, it was impossible that much profit could be made by feeding cattle fat. Six pounds of oilcake cost 7d. or 8d.—but what would that do to fill up a large ox, even if you added 10 lbs. of oats?

Mr. Scott, Dalmore, thought the right proportion for fattening was one-third artificial and two parts turnips.

Mr. Gentle—How would you part them—weight for weight?

Mr. Scott—He would say, for instance, 3 lbs. oilcake to a cwt. of Swedish turnips.

Mr. Hendrie said he was but a young farmer, but he had spent as much on feeding cattle as many now present. His experience was, that his greatest labour was to get them fat. That was always the best thing to do, and the cheapest and readiest method of doing it was always the best. With regard to artificial feeding, he agreed very much with Mr. Scott: he would not go altogether into artificial feeding, but would give enough of food grown on the farm—that is, he would give artificial food in the morning, or in the evening, or at the fattening—whichever was thought best in the circumstances. But some was necessary for stiff cattle, that had not good breeding, to try to put them fast into condition. He would certainly give something extra for feeding, but though he was using a good deal of artificial food just now, he would not venture to fix on any quantity as a rule—or say how much might be necessary. If there was to be a profit at all, the sooner it was made the better; and if there was to be a loss, the sooner it was over the better.

Mr. Gentle did not reject the artificial food altogether. He would give double the oilcake that Mr. Scott mentioned for a full-sized ox.

Mr. Webster agreed with Mr. Gentle that turnips must ever be the staple of feeding. But it ought to pay to give a fat ox 6 lbs. or 7 lbs. of oilcake. Oilcake could never be better used for calves than as recommended by Mr. Kemp—that is, giving it dry.

Mr. Garden was more in the way of dairy farming than feeding, but his idea was that Mr. Kemp was right—that artificial feeding was most necessary. For calves about 1s. 6d. a day, between milk and artificial food, was necessary for most; but when they were right calves, less than that would do.

Mr. Fraser, Balloch, agreed with Mr. Kemp. To give calves half artificial feeding was absolutely necessary for a few months. But he was not at all sure that it would pay to feed them artificially till near the time for selling them off. Give your beasts a good start first, and then fair feeding out. When you are going to sell them off, give them artificial food again. That was necessary, or at least it was all that would pay.

Mr. Kemp said his remarks had been partly misunderstood. Mr. Gentle seemed to think he meant to feed cattle wholly on artificial food, but this was not his meaning. His young beasts got no more after the first fourteen months till they were fattened up, either at two or three years old, with two or three months of artificial food. They had always plenty of turnips and farm produce.

The Chairman (Mr. MacEwen, Moyhall) summed up. The general opinion seemed to be that 3 lbs. to 4 lbs. of artificial food to a cwt. of turnips was good feeding, and would pay. It gave a fine finish to a beast that turnips alone could not do. While given to calves, it was a very great assistance indeed, better than turnips altogether, or any other food you can give them, for it was different from the usual feeding, and prevented calves from scouring so much as they were liable to. The conclusion come to, therefore, was that it was profitable to use artificial food to a moderate extent.

THE WAY THE WIND BLOWS.—At the meeting of the North-East Hants Agricultural Association, Mr. Beach, one of the Conservative members for North Hants, and for the last year or two a very active member of the AntiMalt-tax Association, was present. In the course of a tolerably long speech the hon. gentleman touched upon the influence of agricultural societies, the wet harvest, the decline of the cattle disease, the cholera, the Continental war, the clergy, and the condition of the labouring classes, but curiously enough he omitted all mention of the Malt Tax! Is not this, again, suggestive of the shelving system?

THE FAVERSHAM PLOUGH TRIALS.

The annual field-day of the Faversham Agricultural Association, on Wednesday, Nov. 14, embraced a novel movement that may be advisedly imitated, if the advocates of steam cultivation intend to have their influence duly appreciated. The novelty of the day was a match with steam ploughs, between seven practical farmers. The machinery here worked has in most cases been as constantly in use as necessary, for years; and some of the engines, tackle, and ploughs have been instrumental in ploughing up hundreds, and, it may be, in some cases, thousands of acres of land. In some instances also, it appears, the ploughmen were only put to this work from the ordinary horse-plough peculiar to the county of Kent, and received one or two days' instruction from the maker or agent, who supplied the implement. In the case, for example, of Messrs. Neame and Abbot's man—for whose work the first prize was awarded—he had only one day's instruction from a mechanic sent by Messrs. Aveling and Porter. Thus it would appear that, if an interest can be raised in this kind of work, and fair confidence established in the minds of farmers and husbandmen, there is not so much difficulty as is generally supposed in finding, among our agricultural labourers, men with the amount of natural ability and intelligence which is required to practise this modern form of husbandry with every requisite success.

This match, it transpired during the speechifying after dinner, did not originate with the leading men in connection with the local horse-ploughing match, but with the farmers who consider that they have superseded the power of animals in this particular work by the employment of steam. The expenses attending the contest, too, were not, except to a small extent, taken out of the limited funds of the Faversham Society, but were subscribed by the farmers in the locality. There is at present no rule in the Faversham Society's byelaws that admit of its subscriptions being appropriated to the encouragement of steam ploughing. If, however, it is desirable that this system should be extended, the sooner a rule to the required effect is adopted by this, as well as other societies, the better it will be for everyone interested in agriculture. The exception referred to above, was the amount of prizes in money given to the men who worked the successful machinery. These consisted of £7 for the first in merit, £5 for the second, and £3 for the third, with £1 extra for the driver whose engine was in the best condition. As the main object of the association is, or should be, the encouragement of skilled workmanship in every branch of husbandry, although no prizes could consistently be offered to the owners of tackle, it was perfectly in accordance with the spirit of the society to offer the above awards to the men. This precedent, as we believe it is, other societies may advisedly follow, not only on the above ground, but because their flagging spirits, which have become more and more depressed in many instances of late years, will be materially revived by the beginning of what may be termed a new start in their existence.

The substantial honours competed for were three silver cups, varying in value from £5 to £10. As a farther inducement for farmers to leave their work at home, and spend two or three days' time inmaking this public demonstration, the promoters of this meeting appropriated a portion of the sum subscribed, about £70, to pay 5s. per mile to reimburse the travelling expenses for men and machinery; and when it is considered that one set came thirty-two miles across country, another twenty-eight miles, and some others over twenty miles, it is clear that this was not only a fair, but a most judicious expenditure of resources. The number of entries was ten, but from some unforeseen causes only the seven above mentioned came to the field. Their names will appear in the few notes we have to make on the work done by each set of tackle and men. The ploughing took place in a field in the occupation of Mr. Robert Neame, that was admirably-adapted for such a match; for, independent of its good form, it was, like the rest of the Lady Dane Farm, of which it formed a part, perfectly free from bulbous plants, and the only living vegetation there was upon it was composed of the few small annuals that had sprung up since the last crop of corn had been harvested. The space drawn out for each competitor was four acres, but a preliminary turn or two were allowed before starting in the contest. This being the plan adopted, the land was afterwards measured, as well as the time taken. It was the intention of the committee to have made the time of setting down the tackle an element for consideration by the judges, but the tremendous fall of rain on the Tuesday between nine a.m. and noon made this desirable estimation impracticable. Indeed, so heavy was the rain, and so wet the soil in consequence, that it was at one time feared the match would have to be deferred. But by the resources placed at the disposal of the men by Mr. Neame, and the practised generalship and well-known energy of Mr. Aveling, into whose hands the management of the field had been placed, the engines and tackle were got to their allotted places. Not, however, with the best effect, as may be judged; for, to be prepared for the next day's ploughing, the leading principle of steam-ploughing had to be violated, inasmuch as the main advantage of this system is to place its patrons in a position to be so far independent of the weather as to be able to stir the soil when it is dry enough to be benefited by the process, and to set their machines by, without cost for food or fuel, when there is too much wet to move without causing injury instead of good.

The following notes will convey a good impression of the quality of the work and the skill and care of each set of men. The time of starting was 9.50 a.m.

The honour of having done the best work clearly lay between Messrs. Neame and Abbot (No. 5) and Mr. Mansfield (No. 7), and the judges had undoubtedly considerable difficulty in coming to a satisfactory decision. The latter work would, offhand, have accorded to it a decided preference, as it was beautifully straight and well turned; in fact, in these respects, nothing could be better done. But there were other points which were comparatively less perfect and equal. The ends were neither evenly begun nor carried far enough out, therefore an unnecessarily large headland was left. The time, too, in which Mr. Mansfield's work was done was greater than that Messrs. N. and A. took. This is an important element in this deep-furrow work for fallowing. It was no doubt owing to the steady way in which this plough proceeded that the furrows of plot 7 were more even than those of plot 5. On these grounds the judges, very properly as we think, awarded the first cup to Messrs. Neame and Abbot, and the second to Mr. Mansfield.

The amount of land ploughed, and the time taken, we will give in the form of a table below.

Captain Gillows, of Sandwich, took the third cup, with some excellent work; but his man began under considerable disadvantages, from his opening furrows coming in some deep tracks left by some of the tackle which passed in that direction the day before. The furrows of this work were admirably turned.

Mr. Henry Pye, of St. Mary's, Kent, ploughed plot 3, and his work was regularly, evenly, and straightly done; but he had to turn his furrows up-hill, while the other six turned theirs down. This made a great difference; and it arose from the fact that the engine he used was the first one that was made for the late Mr. John Fowler by Messrs. Ransome and Sims. It was first used at the meeting of the Royal Society at Salisbury, and after having gone through all the improvements from that time up to the application of the clip-drum, it is now left with arrangements for working the rope from one side only. This would have been of no consequence if the work could have been left till the weather was suitable; for then the engine could have been taken to the other side of the field, and the work done accordingly in the more suitable direction. Here it may be remarked, too, the anchor used was the first one that was adapted to the employment of a drum under the engine. It is of wood, excepting the wheels for propelling it, and the discs for holding it in its place. On this we may say, we were informed that Mr. Pye has had sufficient enterprise and spirit to have all the intervening alterations, from the first 8-sided drum to its present clip-drum, made to this engine at his own expense. It is of 14-horse power, which enabled 4 furrows to be carried, and accounts for the difference in Mr. Pye's time and quantity, as shown in the subjoined table.

Mr. Jas. Lake had plot 2. This work was begun with four furrows, but the heavy draught required for a depth of eight inches, and the sopped state of the subsoil where his windlass stood, caused it to be so shifty that one furrow had to be dropped, and three only carried at once. This of course caused much delay, and knocked Mr. Lake out of time. The work done, however, was soundly cut, and otherwise creditably performed.

Messrs. Blaxland and Marten, of Faversham, had plot 1, and did some good work; but from the "pitch" of the shares or coulters not being quite regular, the furrows were what is locally termed "coupled"—that is, from some being a trifle larger than the others, two were heavily and the adjoining ones lightly pressed. This gave an unsightly appearance, as well as a marked difference in the consistency of the ploughed soil.

Mr. Thomas Lake, of Tonge, Sittingbourne, did his work with one of the original wooden ploughs, made for Mr. Fowler by Messrs. Ransome; it was fitted, too, with the Kentish mouldboards, or "reists." The work was turned, and the wide furrow formed, just as it is done by the old "turn-reist." So far as the turning went we cannot but admit there was no more perfect specimen of thoroughly ploughing the soil than was here presented. But the shares, or coulters, were here at fault in the way above-mentioned, and the "coupled" furrows were likewise similarly laid.

We now classify the time and work done:

	NAME OF OWNER.	LAND PLOUGHED.				TIME OCCUPIED.	
		A.	R.	P.		H.	M.
No. 1.	Messrs. Blaxland and Marten ...	3	1	15	......	3	55
2.	Mr. James Lake	2	0	19	......	4	25
3.	Mr. Henry Pye	3	0	27	......	3	30
4.	Capt. W. Gillow	3	0	20	......	4	0
5.	Messrs. Neame and Abbot ...	3	0	15	......	3	50
6.	Mr. T. Lake......	2	3	5	......	4	25
7.	Mr. J. Mansfield	2	3	23	......	4	25

A few general remarks in conclusion will show how singularly the choice of machinery runs in different localities. All the ploughs used were after the late Mr. Fowler's patent, although they were varied in material and construction; while five of the windlasses out of the six were after Messrs. Howard's patent, and all the anchors, snatch-blocks, and stationary-porters were also made by the Bedford firm. All the engines, too, excepting Mr. Pye's, as above described, were from Rochester, and made by Messrs. Aveling and Porter, the well-known firm in connection with locomotives. It is almost needless to say these were all traction engines. In each case, also, excepting Mr. Pye's self-acting anchor and drum system, Mr. Aveling's running-porters were used to carry the rope before and behind the plough; and it is but fair to add, these running-anchors did their work admirably, and most effectually, not only as regards carrying the rope, but also in respect to the relief which they afforded to the boys who otherwise would have had to pursue the exhaustive labour of going backwards and forwards with the plough to remove the anchors as the plough approached, or place them as the rope became slack and trailed on the ground. The easy way in which the running-anchors were attached and detached by these boys left nothing better to be desired.

In respect to the condition of the tackle, we may remark that Mr. T. Lake's man was awarded the £1 for his machinery being in the best condition. He fully deserved it. In this management of the machinery there were several instances where this was anything but commendable; while such incapability, if so it can be called, must have occurred from carelessness, rather than from any want of knowledge or skill. The winding of the rope, too, was very badly done in five cases out of the six, where an accumulation of coil necessarily occurred on the drum. In one case this became dangerous. Mr. Lake (No. 2) has one of Fowler's compensating breaks; and, except with the greatest care, the rope would have overshot the flange of the drum, and become entangled in the gearing, or the cogs of wheels or rope would have yielded to the obstruction or biting of the machinery. This compensating-break is most ingenious in conception and cleverly made; but there are too many pieces about it for hauling across country, and using for field purposes. These complications may be highly serviceable where machinery is fixed; but where engines have to be taken to their work, as they do in agricultural operations, the greatest possible simplicity in arrangements must be observed.

THE SALE OF EXMOOR PONIES.—No less than 78 of Mr. F. W. Knight's ponies were sold at Reading by Mr. Tomkins, in September, but the average was not a high one, many of the lots going for less than a man might pick and choose from a way-side drove. Only three reached to a score each, Sir Rowland going for 27 gs., King Tom for 26 gs., and Idler for 20 gs. Mr. Robert Smith did better with his 32 ponies, cobs, and hacks at Bristol on Wednesday, although the business was not so good as that of last year, while the higher prices included Sextus by Sextus, 33½ gs.; Negress by Sextus, 23½ gs.; King of the Moor by the Baldfaced Stag, 31 gs.; Queen of the Moor by the Baldfaced Stag, 40 gs.; Sir George by the Baldfaced Stag, 37½ gs.; Brunette by Artist, 30 gs.; Keepsake by Master Bobby, 28 gs.; Rhoda by the Baldfaced Stag, 24 gs.; Dr. Syntax by Artist, 27 gs.; Mazeppa by Sextus, 27 gs.; The Sweep by Artist, 25 gs.; Lemonade by Sea King, 33 gs.; Samson by Trotting Wonder, 40 gs.; Edgar by Trotting Wonder (15 h. 1 in.), 62 gs.; The Czar by Leo, 31 gs.; The Amazon by Leo, 52 gs.; Punch by Suffolk Punch, 21 gs. We see that some other breeders, hitherto quite unknown, are announcing their sales of Exmoors, and the thing threatens to be overdone.

ON HARVESTING CORN.

Cereals are harvested in a manner different from that in which we collect the other fruits of the earth. The reason is that the crop has a double value. It consists of two distinct portions—one less bulky and more precious, destined for the food of man and of beast; the other, more bulky and less precious, used for litter, for thatch, and for similar purposes. The unthrifty economy of the farmer seeks to grasp this double harvest at the same operation, and, in so doing, causes a double loss. He loses on his straw, because he cannot mow it so close to the ground as he does his hay, for fear of the loss of grain by the fall, particularly in wheat, and if the ear be fully ripe. He loses on his grain because he handles the plant in bulk, shaking the ripe ears at every operation, and, more than all, because the difficulty of dealing with the crop in unfavourable weather is so much increased by its weight.

Now if the farmer would be content to deal with his grain as he does with his other fruit, to take the trouble of a double ingathering, to crop ears of corn as he would basket cherries or bin hops, and then to mow his straw as he mows his hay, he would incur a first expense perhaps double of his present. If, when the corn arrived at the proper stage of maturity, irrespective of barometer or weathercock, he were to turn all available hands, women and children more profitaby than men, on his well-eared fields, each provided with a basket such as that in which seed corn is carried, slung round the neck, and a small knife, or a triangular piece of iron, worn like a tailor's thimble on the fore finger, the whole of the corn would be rapidly secured, being plucked or rather bent over the knife immediately beneath the ear, dropped at once into the basket, and never suffered to touch the ground, nor knocked about to the loss of a single grain, before it was safely deposited in the granary; then, if wet, it could be readily and inexpensively subjected to a single process of drying, a process which, if once adopted, would be likely to become universal, whether the corn were ingathered wet or dry, as it would entirely obviate the painful and clumsy process of thrashing. If the ears of corn were placed in baskets or wire trays, tier above tier, so that a strong and sustained blast of air were driven through them, whether set in motion by a fan or by the draft of a lofty chimney—the great power of which is well known to those who have had to deal with really high stacks—not only would all superfluous moisture be rapidly absorbed, but the ear would become so dry as to cease to retain the grain, which would fall from the basket as from a sieve on the slightest motion. The precious part of the crop thus secured, the farmer would take his own time for mowing the straw, or cutting it by machinery; at least he would so do until practice in drying the wheat itself should teach him that it was a false economy to lose either straw or hay in unfavourable weather for want of proper arrangements for drying these valuable crops.

If the cost of reaping were, as we said, doubled, without making any allowance for the increased quantity of straw, or for the saving in grain by the hand-picking, and setting the expense of drying against that of thrashing, we can admit that 3d. or 4d. a bushel would be added to the cost price of wheat. Against this what has the farmer to set? The deterioration of the crop by bad weather, and the risk of almost total loss. The present harvest, so promising a few weeks since, is estimated to have lost a tenth of its quantity, besides deterioration in its quality, by the not unusual bad weather. Would 3d. or 4d. a bushel be a price at which the country would hesitate to ensure its crops of cereals. If a crop could be under-written at that price, when just beginning to ripen, would a merchant hesitate so to cover himself against loss. But this additional cost would not be loss, but fairly remunerative expenditure; and when we consider the manner in which inexpensive labour would be available in the first instance, the saving of bulk, which would diminish the cost of all subsequent operations, the saving of grain from percussion at every stage of its storing, the avoidance of risk and of subsequent processes, by carrying a thoroughly dried sample of corn instead of a damp or partially dried sample to store, and the increase in quantity of straw, it is a question whether the increase of cost would be really sensible, apart from the vital question of assurance against total loss.

The Austrian Government are known to have adopted complete and satisfactory methods for the drying and preserving of store corn in the great fortresses of the Quadrilateral. Those familiar with Southern Europe will bear in mind the constant occupation of the roofs of the houses in some districts in drying and re-drying grain, and in exposing the precious seed to the vertical rays of the sun. It is incredible that in our climate we should yet have to learn such a lesson. Who will believe hereafter that a people so ready to forge blades and to cast cannon for the defence of their coasts against any human enemy could be content to let their poor fast three days in the month—for to that at least is the actual rise in the price of bread equivalent, whenever such a rainy summer as may be expected to recur every third or fourth year takes place—and then to solace themselves by the assertion that the weather is beyond human control?

We speak with all respect of the farmer. We hold that no persons deserve the more emphatic reprobation of all good citizens, and of all honest men, than those who endeavour to divide our common weal by setting class against class, whether it be the poor against the rich, the labourer against the employer, the manufacturer against the agriculturist, or the idle and prating in any rank of life, against the industrious and the contented; and if there be any calling in life that would seem to demand the respect of all other members of the body politic more than another, it would certainly seem to be that which provides the bread we eat. In that ancient law which the criticism of the day holds to be inspired by justice alone, and to some extent wanting in the gentler attribute of mercy, it was forbidden to muzzle the ox that performed the duty of thrashing in a mode even ruder than our own. But it is not as grudging a fair, or even an ample return for the labour and the capital of the farmer, that we remark that he has been, to a considerable extent, deprived of that wholesome stimulus of competition which has urged the labourers in other departments of production to such vigorous and successful effort. We must eat. There is, as yet, no substitute for bread and meat, for cheese and milk, and butter, for oats, for barley, or for hops. That chemistry will hereafter supply us with food, unelaborated by the slow process of vegetation, is our firm expectation; but the time is not yet come. The farmer, therefore, possesses in some sort a monopoly—and a monopoly of a peculiar kind. At times the variation of the seasons is such that a bad harvest in this country coincides with a fruitful season in the other corn-growing districts which partly supply our markets. In such cases, while the general productive result may be undisturbed, the English producer will, for the year in question, be a loser, and the foreign producer will pocket a share of the natural average profit of the English farmer. But it is, perhaps, more frequently the case, as in the present year, that the distribution of weather over the corn-growing latitudes of our northern hemisphere is more impartial, and that the harvest suffers alike in England and in America, in Belgium, and the fields bordering on the Danube. It is calculated, or rather estimated, that a tenth of our harvest has been lost owing to the wetness of the summer. But the foreign harvest is no better than our own. The food produced for the supply of the coming year has fallen short, to a greater or less extent, all over the world; and every farmer, let us assume, has sent nine, or even fewer, sacks of corn to market, instead of the ten on which he counted in July. But the loss does not altogether, if at all, fall on the farmer. It looks as if it were the other way. Nine quarters, or even eight quarters of wheat, at 60s. a quarter, represent a higher money return than ten quarters at 40s.; and, without making more than a rough approximation to quantity and to price, the result to the farmer of a bad harvest may be thought not unfrequently to take this form. If corn were paid for, like coal, by its food-producing power, the onus of the seasons would fall upon the farmer. While corn is paid for in inverse proportion to its abundance, the loss arising from bad weather, and from a quiet submission to all the ill-effects of bad weather on the supply of food, falls chiefly or altogether on the consumer. It is not, therefore, a farmer's question that we are now attempting to solve; it is a question that comes straight home to every man who knows what it is to look at the loaf on his table, and to wish that it were larger or cheaper. It is, above all, to the poor that we give the counsel so to gather up the fragments of the store offered by the bountiful hand of Nature that nothing be wanting.

To gather up the fragments! to leave nothing then for the gleaner! to leave no room for that picturesque and affecting industry, of which we can trace the history for nearly four thousand years! to substitute the iron grasp of scientific thrift for the time-honoured common law of humanity, older than the Twelve Tables of Roman law, and passing from an unwritten to a written form, at the same date as the Decalogue itself, that law which forbade to "wholly reap the corners" of the field, or to "gather the gleanings of the harvest"! We would deal reverently with this vested right of the poor and the feeble. Yet does not its very existence speak loudly as to the wasteful character of our present mode of harvesting? The more precious to the poor is the right of gleaning, the larger is the waste which the gleaner prevents from being total. But the true reply is that we would raise the dignity and would raise the emolument of the gleaner. It is those who new glean scattered and fallen ears whom we would send out with knife and basket to gather corn. We would substitute a fair day's work for the public, fairly paid, and well worth a fair payment, for a desultory day's work for the individual, the hazardous remuneration of which depends on the largeness of the farmer's heart or the looseness of the reaper's grip. We would bid the gleaner to sit down, an equal guest, at the harvest-home dinner, not to gather up the scraps beneath the table and to dine on what she can save from the rooks.

Great and advantageous changes have been made since we, years ago, urged the necessity for improvements in our farm buildings, and showed the wastefulness and injuriousness of parts of our farmyard management. It is to be hoped it will not be long before we may be able to say the same thing in respect of our present protest against the existing helplessness in the face of bad weather.—*The Builder.*

ONE PECK OF WHEAT PER ACRE.

SIR,—Yesterday, the 26th Oct., I supervised the putting-in of half-a-peck of wheat on half-an-acre in my eleven-acre chapel land. The rest of the field was drilled to-day with 4 pecks per acre (my usual heavy-land quantity), but half-an-acre on one side of the thin-sown was drilled with 3 pecks an acre. It is on a clover-lea, mown for hay and then manured and fed, according to my usual custom. The dibbling of the half-acre employed one man to dibble and five women to drop a whole day—that is, from half-past 6 to 5 p.m. The cost is—one man, 2s. 6d.; five women, at 10d., 4s. 2d.; or at the rate of 13s. 4d. per acre. In ordinary dibbling it only requires two women or girls to drop for each dibbler; but then the seed is hurriedly and carelessly dropped into the dibble holes, in quantities varying from five grains to a dozen. In my case one kernel only was dropped in each hole, although occasionally two would slip in, and sometimes one would drop outside. The total quantity delivered to the women was three-quarters of a peck, and when their bags were emptied in the evening, and the contents accurately measured, more than a quarter of a peck was returned; so that, as on former occasions, rather less than one peck per acre was disposed of. The wheat was white club-headed rough chaff, weighing 63lbs. per bushel. I sold 30 quarters of it yesterday, at 67s. per qr. The field on which it grew produced a fraction over 4½ quarters per acre; and as a peck an acre was grown in that field, it yielded quite as much as the average of the field, although somewhat less than its adjoining half-acre. Yesterday the dibble-holes were all left open until they had finished, and then one stroke of the light harrows covered them. As a certain friend of mine doubted whether one peck of seed per acre would allow one kernel to so many holes as 6 inches by 4¼, I sat down quietly in the evening, weighed half-an-ounce of the seed we had been putting in, and then counted the kernels. The result is as follows: Weight of seed per bushel, 63 lbs.; half-an-ounce gave 424 kernels, therefore 1 peck would give about 213,696 grains, and as there are 43,560 superficial feet in an acre, 1 peck would give almost five kernels to each square foot. The dibble-holes, 6 inches by 5, would give about 5 dibble-holes to each square foot, so that in fact one man in the course of a day made 108,900 dibble-holes. This is done by walking backwards, and working with an iron dibble in each hand. On looking at these dibble-holes (five to each square foot), before they are covered up, every impartial observer must feel that the plants of wheat will be fully thick enough. Liebig says, justly, that the greatest enemy to a wheat plant is another wheat plant, for they both require the same kind of food, and fight for it when too closely packed. The result is then the same as with an over-crowded plantation of young trees: they are crippled and stunted. Now if one peck per acre gives five plants on every square foot, one bushel per acre will give 20 plants for every square foot, and two bushels per acre would give 40 plants for every square foot: one fine plant of tillered wheat will require at least half a square foot to itself. In order to get 5 quarters per acre from one peck of seed, each kernel should produce four average ears, or 40 kernels to each ear. The power to do this does not depend upon the seed, but on the condition of the soil, both as to tillage and food for the plant. If these are ample, instead of four ears we shall probably get an average of six ears, or 240 for one; that is, 240 pecks for one, or 7½ quarters of wheat per acre. I hope to get nearly as much as this next year, if a fine season. I lately heard that one of the women droppers was last year fractious and captious, and neglected her work on my peck an acre, so that the plant was not so regular as it ought to have been. Let me advise my brother-farmers always to sow the very best seed, well dressed, and then passed through the blower, to get rid of the light or imperfect grains. I know that in too many instances tail or inferior corn is sown as a matter of economy—a ruinous and false economy. Whenever a farmer desires to get a large return of seed from some particular sort of wheat, he carefully plants it in his garden, one kernel in a hole, gives it ample space, and gets an enormous increase. Having thus accumulated a stock, he pursues an entirely opposite course in his fields. This is inconsistent and illogical, and we must draw the inference that his field-cultivation is so imperfect and inferior to his garden that he has no faith in its power of producing a great crop. Why should not our land be gardened? It can only be done by an additional investment of labour and capital, and a diminution in tenable area. I once said to a farmer, "Why don't you farm your garden the same as you do your land?" "Oh," said he, "it would not pay; we should not grow enough." I never heard a stronger reason for gardening the land. There can be no doubt but that thick sowing causes immense loss to the farmer and to the country. As soon as by high feeding and rich manuring the land becomes forcing, we hear it said, "I get my crops laid and spoiled." I lay down for a principle that land can hardly be too rich for wheat. Put your kernels in at a proper distance, in a rich garden, and what a crop you will get! but crowd the grain in as on an ordinary field, and it will be destroyed. Some folks are afraid to sow early, because they will sow so much seed. Thin sowing, like sewage, has had many warm opponents, but the truth will ultimately prevail; and we shall probably live to see experiments and calculations overcoming mere ideas and strong prejudices arising from old customs under different conditions from those of the present day. My hope, therefore, is in the future.

Tiptree, Oct. 27th. J. J. MECHI.

P.S. Thin sowing won't do with bad unclean farming and imperfect tillage. In weedy undrained land, where the furrow-slice presents an unbroken, twitch-bound, and almost inseparable slice, over which common wood harrows (rakes), with teeth worn down to a stump, dance over the clods, but make no tillage, it would be absurd to expect a great crop, even with abundant seed. On drained and deeply cultivated lands, worked by perfect implements — good iron harrows, with steel teeth—you get a perfect comminution and friable intermixing of the seed-bed, in which the drill can comfortably and safely deposit its seeds. Really, in too many instances, the old imperfect rolls and implements are in antiquated uniform correspondence with the tumble-down dilapidated sheds and buildings.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

Although we have had a humid atmosphere during the greater part of the month, the whole of the outstanding crops in the north have been secured, but in very poor condition. In Ireland and Scotland scarcely any grain is now in the fields; so that harvest work generally may be considered closed. The wheat crop is certainly a fair average as to quantity; but a large portion of it will not be fit for millers' purposes for several months. In the meantime we shall be compelled to purchase increased quantities of wheat abroad to meet our enormous consumption. Barley is turning out a good crop, though much weathered. Fine barleys are, therefore, very scarce, and high in price. Wheat and barley are likely to command extreme quotations during the remainder of the year. Oats have sold at unusually high quotations, notwithstanding that we have imported very large supplies from the continent. In the value of beans and peas scarcely any change has taken place. The quotations are very high, considering the extent of the new crops. The flour trade has been active, at 4s. to 5s. per 280lbs. more money.

The pastures are full of grass for the time of year. Depastured stock has, therefore, fared remarkably well. The crops of swedes, turnips, and mangolds being very large, there is now a good quantity of food on hand for winter use. Hay and straw have given way in price, so that the outlay for cakes during the winter months is likely to be very small when compared with several previous seasons.

We regret to state that the potato disease has extended itself to most of our best districts, and it is calculated that, at least, one-third of the potato crop has been lost. At present, however, potatoes are offering in the London market at from 70s. to 120s. per ton.

Meadow hay has sold at from £3 10s. to £4 10s.; clover, £4 10s. to £5 10s.; and straw, £1 16s. to £2 4s. per load.

Advices from most of the continental markets state that wheat has been in active request on English account, and that prices have rapidly advanced. All kinds of spring corn have moved off freely, at extreme quotations. In America both wheat and flour have realized prices far above the views of shippers to this country. The exports have, therefore, been trifling, and we can hardly venture to suppose that even current rates in England will attract supplies from the United States.

In Scotland there has been some activity in the grain trade generally. Wheat has risen 3s. to 5s., barley 2s., and oats fully 1s. per quarter. Very few shipments have been made to the south. Evidently, however, the crops have been carried in better order than in the north of England.

The Irish markets have been scantily supplied with produce, for which the inquiry has ruled steady, at enhanced quotations. A large portion of the crops was carried during harvest time in good condition.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that the imports of live stock from the continent have exhibited a falling off when compared with the corresponding period in 1865, and that the aggregate supplies of beasts brought forward in the Metropolitan Market have exhibited a deficiency, the beef trade has been in a sluggish state, and prices have had a drooping tendency. The decline in the arrivals of live stock from continental ports has been fully made good by increased supplies of dead meat. During the month they have amounted to about 2,500 tons, chiefly carcases of mutton, and tended greatly, although they have mostly arrived in fair saleable condition, to depress the trade for English meat. In some few instances, the best Scots, &c., have realised 5s. 2d. to 5s. 4d. per 8 lbs.; but the more general figure has been 5s. per 8lbs.

The supplies of sheep brought forward have been only moderate, both as to number and quality. Prices have given way about 4d. per 8 lbs., at which clearances have been effected.

Prime small calves have sold steadily at full quotations; but inferior veal has sold slowly. In prices, however, very little change has taken place.

Pigs have met a slow sale for the time of year, and prices have not been supported. The top figure has been 5s. 2d. per 8 lbs. Evidently the supply of pigs in the country has considerably increased this year. The arrivals from France, Holland, &c., have been in good condition.

It is gratifying to observe that the disease amongst live stock is rapidly on the decrease. Depastured stock, from the great abundance of grass, is doing remarkably well, and there is a great abundance of food on hand for winter use.

The imports of foreign stock into London have been as under:—

	Head.
Beasts	15,876
Sheep	30,108
Lambs	543
Calves	1,378
Pigs	4,859
Total	52,764

COMPARISON OF IMPORTS.

Oct.	Beasts.	Sheep.	Calves.	Pigs.
1865	15,344	69,611	1,952	9,135
1864	16,074	38,715	3,339	5,537
1863	11,560	37,521	1,129	3,965
1862	7,906	28,109	1,327	1,600
1861	5,577	42,538	1,207	5,315
1860	6,750	24,980	1,662	2,074
1859	6,026	24,323	784	878
1858	4,600	24,145	1,581	553
1857	5,819	24,102	1,998	1,233
1856	8,871	10,502	1,280	895
1855	8,136	21,137	1,358	1,501
1854	6,894	16,328	1,009	1,063

The total supplies of stock exhibited in the Great Metropolitan Market have been as follows:—

	Head.
Beasts	27,600
Cows	200
Sheep	99,200
Calves	1,666
Pigs	4,340

COMPARISON OF SUPPLIES.

Oct.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1865	30,210	132	157,840	2,932	2,478
1864	33,840	519	137,424	2,671	3,820
1863	30,512	535	110,800	2,029	3,439
1862	28,975	526	118,780	1,855	3,286
1861	28,220	539	121,390	1,626	3,650
1860	26,240	525	128,250	2,289	2,620

The supplies of English, Scotch, and Irish beasts thus compare with the two previous years:—

From—	Oct. 1863.	Oct. 1864.	Oct. 1865.	Oct. 1866.
Lincolnshire, Leicestershire, and Northamptonshire..................	11,660	10,600	8,450	6,000
Other parts of England .	3,650	3,500	3,700	3,000
Scotland	28	123	53	16
Ireland	2,780	2,070	990	580

Beef has sold at from 3s. 6d. to 5s. 4d.; mutton, 3s. 8d. to 6s. 4d.; veal, 4s. 2d. to 5s. 6d.; pork, 4s. to 5s. 2d. per 8lbs. to sink the offal.

COMPARISON OF PRICES.

	Oct., 1862.				Oct., 1863.				Oct., 1864.				Oct., 1865.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Beef from	3	0 to	4	8	3	4 to	5	0	3	2 to	5	4	3	4 to	5	4
Mutton..	3	4 to	5	4	3	6 to	5	6	3	8 to	5	6	4	4 to	6	8
Veal......	3	10 to	5	4	3	4 to	4	8	4	0 to	5	4	4	4 to	5	6
Pork......	4	0 to	5	0	3	4 to	4	6	3	6 to	4	10	4	4 to	5	10

Newgate and Leadenhall have been heavily supplied with meat, which has moved off slowly, on lower terms. Beef, from 3s. 2d. to 4s. 8d.; mutton, 3s. 4s. to 5s.; veal, 4s. to 5s. 4d.; pork, 3s, 10s. to 5s, 4d. per 8lbs. by the carcase.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

Large quantities of rain having fallen in various parts of the country, serious damage has been sustained by floods, especially in the north of England. Ploughing in that quarter has been greatly interfered with, and the land has become much saturated with moisture. In the southern, western, and eastern counties, however, outdoor labours are in a forward state, and the young wheats have come up with great regularity. Although the importations of foreign and Colonial produce have been on a fair average scale, and although about 750,000 quarters of wheat are known to be on passage from the Black Sea ports, the grain trade has been in a very excited state, and prices, almost generally, have rapidly advanced. In the last week in the month, however, there was a pause in the operations of millers, and wheat could only be disposed of at a reduction of from 1s. to 2s. per quarter. The leading holders of produce, however, seem disposed to think that the quotations have not yet seen their highest point, and that the importations during the winter months will be on a very limited scale. Our impression is, notwithstanding that money is very abundant and low in price, that there is scarcely room for rising markets. On the other hand, wheat is not likely to fall rapidly, because a large portion of the new crop of English will not be fit for millers' purposes until quite the spring.

The inferior condition in which the bulk of the crop was secured has led to a great scarcity of barley fit for malting purposes. Prices as a consequence have ruled high, and some of the brewers are now purchasing low qualities of sugar for brewing purposes. Nevertheless, the malt trade has continued in a healthy state. The finest malt is now worth 80s. per quarter, a price which has compelled the brewers to advance their quotations for beer and ale. Oats have risen fully 3s. per quarter. Even the large arrivals from the Continent have failed to keep prices in check. No change of importance has taken place in the value of either beans or peas; but flour has advanced 2s. to 4s. per 280lbs.

The public sales of colonial wool have been commenced in London. They have gone off heavily, at, compared with the previous series, a decline in the quotations of 0¾d. to fully 1d. per lb. English wool has commanded very little attention, either for home use or export. The quantities brought forward, however, have been only moderate.

The supplies of potatoes on offer have been moderately extensive. Selected samples have realized £7 per ton, other kinds in proportion. Most accounts agree in stating that heavy losses have been sustained by disease this year. In November, last year, the highest price for potatoes was £5 10s. per ton.

The hop trade has been very quiet, owing to the high prices demanded by the growers of hops. The quotations, however, have been well supported, notwithstanding that nearly 5,000 bales of foreign hops have arrived in London only. Hops are now from 25s. to 30s. per cwt. higher in price than they were at this time last year.

The root-crops have turned out unusually abundant; and the pastures have yielded a full average quantity of grass. As the outlay for food for cattle purposes will be very small for some time, hay and straw have met a heavy sale, on lower terms. In London, meadow-hay has sold at from £3 5s. to £4 5s., clover £4 5s. to £5 15s., and straw £1 16s. to £2 4s. per load.

Although the importations of foreign provisions have been only moderate, the cattle trade has been in a sluggish state, on rather lower terms; and it is stated in various quarters that meat has seen its highest range in value for the present.

The Scotch markets have been scantily supplied with produce, which has moved off freely, on higher terms. The shipments of potatoes to the South have been rather extensive.

In Ireland very little wheat has been brought forward. The sale for it has, consequently, been active, at enhanced quotations. All kinds of spring corn, as well as maize, have risen considerably in price. The shipments to England have slightly increased.

REVIEW OF THE CATTLE TRADE.

Notwithstanding that the Metropolitan Cattle Market has been but moderately supplied with beasts during the greater portion of the month, the demand for most breeds has been inactive, and inferior stock has ruled somewhat lower in price. The quality of the shorthorns from Lincolnshire, Leicestershire, and Northamptonshire has shown signs of improvement; but from our other districts the supplies have come to hand in very middling condition. The arrivals from Scotland have been fully equal to most former seasons; but those from Ireland have shown a great want of quality. The average range in the value of Scots and crosses has been from 5s. to 5s. 4d. per 8lbs.

The supplies of English sheep have been small; of foreign, only moderate. In the early part of the month, prime sheep commanded extreme currencies; but, towards the close, prices gave 2d. to 4d. per 8lbs.; the latest figure for the best Downs and half-breds being 6s. per 8lbs.

There has been a steady demand for calves at, comparatively speaking, high quotations, viz., from 4s. 4d. to 5s. 8d. per 8lbs.

The sale for pigs has continued heavy, and the currencies have had a drooping tendency. The top figure has been 5s. 2d. per 8lbs.

The inactivity in the trade in the live market must be attributed to the large supplies of Scotch and country-killed meat on sale in Newgate and Leadenhall. Besides those supplies, about 10,000 tons of meat, chiefly beef and mutton, have been imported from the continent, and which have been mostly disposed of at very low prices.

The imports of foreign stock into London have been as under:—

	Head.
Beasts	13,278
Sheep	38,389
Calves	1,290
Pigs	1,187
Total	54,024

COMPARISON OF IMPORTS.

Nov.	Beasts.	Sheep.	Calves.	Pigs.
1865	16,254	52,517	2,526	7,770
1864	17,137	34,792	2,970	3,947
1863	11,020	30,347	1,770	2,202
1862	6,839	28,577	1,659	633
1861	5,295	27,833	946	1,241
1860	6,961	22,723	1,604	828
1859	5,927	21,907	997	159
1858	4,787	18,258	1,174	156
1857	4,409	17,830	2,687	136
1856	6,102	16,380	1,152	309
1855	7,367	17,094	1,127	454
1854	7,120	16,604	1,108	369

The restrictive measures still in force respecting the importations of live stock from some parts of the Continent have led to a falling off in the arrivals during the past month; but the have been made good by the increased supplies of foreign meat consigned to London.

The total supplies of stock exhibited have been:—

	Head.
Beasts	24,660
Sheep	95,890
Calves	1,190
Pigs	3,090

COMPARISON OF SUPPLIES.

Nov.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1865	36,820	295	167,230	2,858	2,811
1864	32,600	542	114,300	2,587	2,900
1863	27,704	506	99,130	2,156	3,170
1862	30,139	532	110,020	2,313	3,172
1861	26,590	560	109,370	1,370	3,430
1860	25,400	500	103,600	2,112	2,920
1859	26,492	522	120,840	1,299	2,800
1858	24,856	534	114,643	1,437	2,970
1857	25,383	504	103,120	3,002	3,037
1856	25,444	515	105,750	2,096	3,415
1855	27,411	457	97,460	1,585	3,535
1854	23,442	512	121,031	1,848	2,726

The district arrival of beasts thus compare with the three previous years:—

From—	Oct. 1863.	Oct. 1864.	Oct. 1865.	Oct. 1866.
Lincolnshire, Leicestershire, and Northamptonshire..................	9,200	9,300	9,600	7,200
Other parts of England.	2,800	2,700	3,550	2,450
Scotland	309	554	448	154
Ireland	2,800	2,000	1,000	880

The range in the prices of beef has been from 3s. 6d. to 5s. 4d.; mutton, 3s. 8d. to 6s. 4d.; veal, 4s. 4d. to 5s. 10d.; pork, 3s. 10d. to 5s. 2d. per 8lbs. to sink the offal.

Comparison of Prices.

	Nov., 1862.	Nov., 1863.	Nov., 1864.	Nov., 1865.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
Beef from	3 4 to 5 0	3 4 to 5 0	3 4 to 5 8	3 4 to 5 6
Mutton..	3 8 to 5 8	3 8 to 5 8	3 10 to 6 0	4 0 to 6 8
Veal......	3 4 to 5 0	3 4 to 4 8	4 0 to 5 2	4 4 to 5 4
Pork......	4 0 to 5 0	3 4 to 4 6	3 6 to 4 8	4 0 to 5 8

Newgate and Leadenhall have been heavily supplied with meat, in which a good business has been passing. The average top price for beef has been 4s. 6d.; mutton, 4s. 10d; veal, 5s. 10d.; pork, 5s. per 8lbs. by the carcase.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ALYTH SHEEP MARKET.—The reductions, as compared with prices given at the same market of last year, ranged from 5s., 8s., and 10s. per head. There were few fat present, and these went at 7d. to 8d. per lb.; inferior kinds gave less. Black-faced ewes sold at from 18s. to 24s., wedders 28s. to 33s.; cross ewes gave a little more; wedders 36s. to 41s.; Leicester ewes 25s., 30s., and 40s.

ANDOVER FAIR.—The supply of sheep was equal to the average, being about 18,000 head. Trade ruled dull, and prices had a downward tendency. The general quotations were as follow: Lambs, 35s. to 45s.; ewes, 46s. to 58s.; wethers, 50s. to 56s. Fat lambs made up to 52s. A large flock of breeding ewes realised an average price of 63s. the head.

ANDOVER FAIR (Another Report).—The number of sheep penned, about 18,000, was larger than the average of the past seven or eight years. The quality of the stock was very indifferent, and there was a large proportion of culls, some of which were but small and poor. Trade opened very dull, and exceedingly high prices were asked. Sales were in consequence slow, and sellers held back, expecting an increase in the number of dealers on the arrival of the early trains; but as the morning wore on, no improvement was shown, and the fair continued dull to the last, with a slight decline in prices. Lambs from 35s. to 45s., superior quality fat from 46s. to 52s.; ewes from 46s. to 58s.; wethers from 50s. to 56s. Messrs. Downs and Awbery sold by auction 350 ewes, divided into lots of twenty each. The first lot made the high price of 70s. The other lots quickly followed, at prices varying from 58s. to 66s. The average of the flock was 63s.

BARNET FAIR.—Horses of high stamp for harness and riding purposes sold at 35 to 45 guineas, and horses for farmers' work 16 to 24 guineas; cart and nag colts 20 to 30 guineas, and aged horses and ponies were offered at low figures. There was an active demand for store pigs. Good hogs made 32s. to 40s., small stores 18s. to 25s., and breeding sows 3 to 4 guineas each.

BOSTON SHEEP MARKET.—There was a moderate supply of fat sheep, which met with a brisk demand at from 7½d. to 8d. per lb.

BURGH FAT STOCK MARKET.—There was a good supply of sheep, most of which were ready for the butcher. Business was not quite so brisk as at some of the recent markets, and a slight reduction in prices had to be submitted to by the graziers, when a good clearance was effected.

CREWE FAIR.—There was a good supply of store pigs, chiefly young ones, and the business was slow and prices lower.

GUILDFORD FAIR.—There was a fine display of sheep, and, notwithstanding the high prices demanded by dealers, the sheep-pens were quickly sold out at the following prices: Southdown and cross-bred store wethers, 55s. to 60s. a head; tegs, 44s. to 52s.; and lambs of last season, 33s. to 37s. per do. Young ewes forward in lamb, 46s. to 50s.; aged ewes, 32s. to 38s.; and ewe lambs for stock, 30s. to 40s. a head. Rams and tup lambs, 3 to 7 guineas. Handsome cart-horses sold at 30 to 40 guineas, and aged do. 12 to 20 guineas; handsome cart and nag colts, 20 to 35 guineas; horses for single harness and riding purposes, 30 to 40 guineas; do. for van, omnibus, and heavy draught, 35 to 45 guineas; and pony colts, 4 to 8 guineas.

MARLBOROUGH FAIR.—The supply showed a falling-off, and trade was very dull, prices being 1s. to 2s. the head under those of Andover. The following were the average quotations: Wethers, 45s. to 58s.; ewes, 45s. to 55s.; lambs, 35s. to 50s.; but some made 60s. The horse trade was brisk, especially horse colts.

MORETONHAMPSTEAD GREAT MARKET.—There were about 600 sheep, in general remarkable for their good condition. Prices from £2 to £2 2s., wethers from £2 2s. to £2 5s. Sale rather dull.

NEWARK FAT STOCK MARKET.—A fair show of sheep. Best wether mutton realised from 8d. to 8½d., ewes 7d. per lb. Buyers were plentiful.

NEWTON-STEWART HORSE FAIR.—There was about an average number, but business was slack, and prices low where sales were effected, which caused no small grumbling amongst sellers. There was a fair inquiry for good animals, but very few were shown.

OSWESTRY FORTNIGHTLY FAIR.—There was about an average supply of sheep and pigs. Mutton 8d. to 8½d., and in some extreme cases 9d. per lb.; pigs 5d. to 5½d.

SALISBURY FORTNIGHTLY MARKET.—The number of sheep of prime quality was short, the offer principally consisting of secondary descriptions, the demand for which ruled very inactive, prices being in favour of buyers. The best, however, readily realized late figures, 8d. to 9d. per lb.

SETTLE FORTNIGHTLY FAIR. — There was a very good show of sheep, but the demand was dull, and prices a little lower than last fair.

SPILSBY SHEEP MARKET.—There was a good show of both fat and store sheep, most of which were sold. Prices were the turn in favour of the buyer.

TRURO FAIR.—There was but a small number of fat sheep; but of store ewes there was a pretty fair supply. The sale was but slow: fat sheep fetched from 7d. to 7½d. per lb.; store ewes 40s. and above.

WELSHPOOL FAIR.—There was a small attendance of buyers and sellers, the weather proving most unpropitious. There were very few horses, and all of inferior quality. Few, if any, fetched more than £30 to £35. There was a fair supply of sheep and pigs, at rather reduced rates, compared with recent fairs: indeed, very little business was transacted. Fa sheep fetched about 7½d. per lb. Bacon pigs were a drug at 4½d. to 5½d. per lb. Trade was generally sluggish.

YEOVIL FAIR.—About 3,000 sheep were penned. Altogether trade was not very brisk. Down ewes sold at from 40s. to 50s. each, horn ewes 48s. to 55s. each, lambs 40s. to 55s. Wether mutton made 8d. per lb. Pigs, where sales were effected, realized slightly advanced prices.

YORK FAIR.—There was a brisk demand for good, active, and strong dray and agricultural horses, which obtained high prices, as did also a few useful ponies. Any other horses possessing quality were bought up, but there was a large number of worthless animals, in which the trade was a drug.

IRISH FAIRS.—Castlebar: Milkers and in-calf cows met with ready purchasers, averaging from £8 8s. to £16; store heifers from £8 to £12; bullocks a little less, as they were not in demand. The show of sheep was small; fat sheep went off at from 40s. to 45s.; other kinds from 25s. to 35s. Lambs from 20s. to 30s.—Camlough: Beef cattle were fairly supplied, and the prices demanded were high; they were from £12 to £20—average, £17. There was a fair business transacted with the Newry victuallers. Springers were in good supply, but not greater than the demand. The prices were from £12 to £18 10s. for four and five year olds; and for aged cattle in the same condition from £9 to £12—average about £10 10s. Milch cows were also well supplied, and the prices paid were high for winter's milk: they were from £8 to £14 10s., according to size, age, and quality—average price £11. Strippers were very plenty, and a great number of strong beasts were quickly bought up for stall-feeding at from

£3 10s. to £13—average, £10. The fair was very full of strong heifers and bullocks of two, three, and four years old, and prices for three and four year olds were from £12 to £16; two year olds £7 to £10. Yearlings were also planty, and the demand was considerably improved; prices, £4 10s. to £6 for heifers, and £3 10s. to £5 5s. for bullocks.—CARLANSTOWN: Fat bullocks rated from £20 to £25 each, and finished heifers from £17 10s. to £22 generally. Beef appeared to remain fully 63s. per cwt. for prime beasts, while second-class rated about 56s., and inferior from 48s. to 50s.; store bullocks fetched full prices, three-year-olds realising from £14 to £17 each; two-year-olds, £9 to £11; and yearlings, £4 to £6 10s. per head; three-year-old superior store heifers £14 to £16; inferior, £12 10s. to £14 a-piece; yearlings (off), £4 to £8. The extreme rates for dairy cows were from £10 to £22 per head. In the sheep department the demand was somewhat improved, and weather mutton for top lots readily commanded 7½d, per lb.; inferior and ewe from 6¼d. to 6½d. There was a thronged fair of pigs, with tolerably brisk buying of stores and bonnives. The former brought £2 to £2 15s. a-piece, and the latter from 20s, to 30s. per couple; slips from 28s. to 35s. each. Bacon was unchanged in value, selling about 8s. 6d. per 20 lb.—BALLINAKIL: Bullocks were in great request, and sold from 10s. to 20s. advance on late prices. Heifers were much sought after, and never realized higher prices. Milch cows were eagerly bought up, both for home and export. The following are the quotations: three-year-olds ranged from £12 to £20; two-and-a-half-years-old, £8 to £15; one-and-a-half-years old, £3 to £9. Sheep were quiet, no advance being made on late prices.—NAAS: Fat cattle and beeves were least represented; those present brought good prices, ranging from £18 to £27, or about 58s. per cwt., sinking offal; second quality a shade lower. Milch cows and forward springers as usual sold well, prices varying from £14 to £22, but £17 was the price at which most sales took place. Store cattle, an immense supply; and heifers were much more looked for than bullocks. The consequence was that some of the latter, which were bought last September at £13 10s., would have been sold for £12 15s. Store bullocks from £10 to £12 17s. 6d.; heifers £10 15s. to £14; second-class bullocks, £7 to £9 10s.; third-class, or yearling bullocks, £3 5s. to £5 5s.; heifers, same class, £3 10s. to £6 6s. Strippers and dry cows were not in good demand; the former were sold at £9 5s., and the latter a shade higher. Fat sheep sold at 6¾d. per lb., or about 47s. 6d. to 58s. each; hoggets, 28s. 6d. to 36s. each, and some minor lots at still more reduced prices.—DUNDALK: Fat cattle seem to be rather scarce. There were only some half-dozen lots exhibited for sale. They sold for £13 10s. each. Store cattle, comprising yearlings, two-year and three-year-olds, were in large supply, but mostly of an inferior quality. Large numbers were, however, brought up for export and fattening purposes at prices ranging from £6 10s. to £9.—CALLAN: Ewes and wedders of top quality fetched from £2 17s. 6d. to £3 3s., hoggets £1 18s. 6d. to £2 7s. 6d., and lambs £1 5s. to £1 16s. 6d. per head; three-year-old bullocks brought from £11 10s. to £14 5s. each, two-year-olds £7 15s. to £10 5s., and yearlings £3 17s. 6d. to £6. Two-year-old heifers scarce and dear, £12 to £14; yearlings £5 15s. to £8 10s., and weanling calves £2 15s. to £3 7s. 6d. Strippers and missers £8 15s. to £13, and half-fat cows £14 10s. to £16 each. First-class beef 60s. per cwt., and mutton about 7¼d. per lb. in sink. Top milching cows £15 to £18 10s., second-class £9 to £12. Strong store pigs 46s. to 53s. each, slips 25s. to 38s., and bonhams 25s. to 43s. per couple.—DROMAGH: Store cattle were in good demand. Prime beef sold: 50s. to at 56s. per cwt. Dr. Edward Foott, Gortmore, sold a three-year-old bullock for £14. The pig market was large; pork went from 40s. to 46s. per cwt.—GORESBRIDGE: A few milch cows were on the ground, and sold from £15 to £18. Of fat beasts the principal were five heifers, which were sold at £16 each. There was a very large show of young pigs, which sold at high prices. On the fair eve there were 100 bacon pigs sold at 48s. to 56s. per cwt.—KILLIMORE: Three-year-old and two-year-old ewes and wedders sold well from the great demand, as a large number of purchasers in this class presented themselves from an early hour, the former realizing prices varying from 40s. to 55s., and the latter from 40s. to 50s.—NEWMARKET: The supply of store cattle was large, and changed owners at from £6 to £12; prime beef realized 56s. per cwt. The milch cattle department was scant in supply, and demand dull. Bacon pigs were sold at from 44s. to 48s. per cwt.—RATHKEALE: Sheep brought 45s. to 55s. for half finished, and 50s. to 65s. for fully finished. Fat cows rated at 60s. per cwt., springers £14 to £18 each, calves £4 10s. to £6 16s. each, two-and-a-half-year-olds £8 to £11. Andrew Griffin, of Newcastle West, bought 43 cows at £14 to £18 each, and his brother James paid an average of £16 each for 24 heifers. The show of horses was of the strong working class, at £8 to £15 each. The pig fair was the largest within the recollection of the oldest inhabitant, there being 5,000 at the lowest calculation; the average prices being, for heavy bacon pigs 38s. to 40s., Berwicks 40s. to 42s.—STRADBALLY: Fat cattle £18 to £27, milch cows and forward springers £14 to £20, average £16: store bullocks £10 to £12 5s., heifers £10 15s. to £14, second class bullocks £7 to £9, yearling bullocks £3 to £5, yearling heifers £3 10s. to £6, strippers £8 to £8 5s.—TULLOW: A small supply of sheep, and not much doing. Prices may be quoted as follows: Three-year-old bullocks £10 to £12, two-year-old ditto £8 to £10, three-year-old heifers £10 to £14, two-year-old ditto £9 to £11, yearlings £4 to £6, springers £13 to £18. Pork 50s., and bacon 62s. per cwt.—VIRGINIA: Beef, best quality, 56s. per 112 lbs., or 6d. per lb., and for inferior from 44s. per cwt. to 47s. 6d. Dry cows sold from £9 to £12 a-piece, and strippers from £9 to £11 each. Three-year-old heifers for stall-feeding rated from £11 10s. to £14 each. Two-year-old heifers from £7 15s. to £9 15s. each; yearlings from £4 to £7 a-piece; two-year-old bullocks fetched from £8 to £9 15s. each for those in best condition; one-year-old heifers fetched from £3 15s. to £5 15s. each. In the sheep fair the buying was pretty good for the best-looking wethers, which brought from 55s. to 56s. a-piece. Best wether mutton quoted at 6d. per lb. There was a small supply of lambs, and those of an attractive character brought fully 40s. each: general run of prices from 30s. to 35s. each. The swine fair was characterized by much spirited buying during the day, Bacon on foot varied in price from 42s. to 45s. per cwt. Pork about 48s. per ditto, sinking the offal. Store pigs from 40s. to 60s. each; bonnives, 6s. to 10s. each.

SALE OF THE DUKE OF HAMILTON'S STOCK.

The whole of this stock, which was sold at the Home Farm, at Merryton, on Tuesday, Nov. 6, made up by far the largest sale of its kind that ever has taken place in Scotland, and it is below the estimate to say that 2,000 people were congregated together. There were 220 pigs, comprising large, middle, and small breeds, from the stocks of Messrs. Wainman, Duckering, Sterne, and Finlay, which realised in all upwards of £500. In sheep there were some very superior animals, comprising four pure-bred Leicester shearling rams, which have obtained first prizes this season at Edinburgh and Alnwick, the best one, bred by Rev. W. Bosanquet, being knocked down to Mr. Drew (who managed the Home Farm for the Duke, and who has taken a lease of it now on his own account) for £23. The next best one was secured by Mr. Bruce, Aberdeen, for £13, and the other two, which realized £12 10s. and £9 respectively, went to Mr Fleming, Kilkerran, and Mr. Drew. The whole of the 77 Leicester ewes were secured by Mr. Drew at prices varying from £8 10s. to £3, the majority of them being £6 and over. Cross-bred lambs, of which there were 103, fetched from 22s. to 24s. each. The famous Ayrshire stock of cows, which has always been a prominent feature at the Home Farm, had eager buyers, especially those of them that were at all "well come." Such of them as did not fetch a price over £20 had no formal pedigree, and did not impress practical buyers, who study the desirable points of excellence of the cow kind. The largest sum realised for Ayrshires was £50 for Black Cow, who had gained first as a two-year-old in milk at Hamilton in 1863, first at Kilbride for the best cow in milk, and silver medal for best of all the prize cows in 1866 at Kilbride—a place where many good animals of the kind are brought forward. The cow is a five-year-old, and was bought by Mr. Fleming, Kilkerran. Blackhouse, now four years old, was the first prize heifer at the Royal Agricultural Society's Show, Newcastle, in 1864, and was knocked down to Major Hamilton, Dalzell, at £37. The dam of the former, although twelve years now, obtained the premier prize at the Highland Society's Show, Glasgow, as "best cow in calf," and fetched £30 from Mr. Fleming. The Duke of Buccleuch purchased a very fine three-year-old, Airblaes, a prize-taker too, for £35. The Duchess of Athole secured Mary at £23, Kilbride at £20, and Castleton at £21, all very good cows. Mr. Fleming, in addition to Black Cow, obtained Dandy at £35, one of the very best three-year-olds in the herd, although never exhibited; and Stranger, also a capital three-year-old, at £34. Sir Edward Colebrooke, Mr. Lyall, (Old Montrose), Sir Alexander Maitland, and Mr. Drew were purchasers of some of the best of the herd at prices varying from £20 to £30. Both one and two-year-old heifers, and even calves, realized considerable sums, varying from £5 to £25, one black and white calf of considerable form and feature realising £15. Bulls were by no means much sought after, being comparatively less meritorious than the cows. Dreghorn, a four-year-old of good form, fetched £21, and Brockie and Stranger each realized £19 10s. and £10, by no means large prices. A very promising one-year-old, named Pettigrew, fetched £13, after some spirited bidding. In all they comprised 143 lots, and although some of them were well sold, many of them did not realise the prices anticipated.

There were thirty-nine horses of the Clydesdale breed; many of them, the mares especially, of first-rate excellence. The sale, which had been kept up with unflagging animation throughout the day, seemed to have culminated at this point, and it required all the efforts of the posse of police to maintain order, all seemed so eager to be immediate spectators of the respective lots. The first one exhibited was a brown mare, Jess, five years old, bred by Mr. Buchanan, Coldroch; sire Sir Walter Scott, gained second prize at Highland Society's Show at Kelso as a two-year-old in 1863, and first in Hamilton as a three-year-old in 1864; this fell to Mr. Drew at £57. Jane, six years old, which gained first prize both at Hamilton and Glasgow in 1863, fell to Mr. Drew at £35. Another six-year-old black mare, named Missie, caused considerable excitement, owing to her fine form and condition, and was eventually knocked down to Mr. J. Hunter, Aldhouseburn, at £73. A fine three-year-old bay mare, Mall, fell to the Duke of Buccleuch, at £65; and a very good one of the same colour was secured by Mr. James Bell, Woodhouselee, Dumfries, at £48. A four-year-old bay mare, Darling, was bought for Lieut-Col. Lund, Woodford Park, Lancashire, at £44; and Bess, a three-year-old of the same colour, which was first as a two-year-old at the Highland Society's Show in Inverness in 1865, and first in Kilbride a year later, was bought for Major Stapleton, Myton Hall, Yorkshire, at £47. A fine-formed brown mare, Kate, fell to the bidding of Mr. Drew, at £69. Maggie, of the same colour, an eight-year-old, which gained first prize at Hamilton, and first at Glasgow in 1862, second at Battersea in the same year, and first at Kelso in 1853, after some brisk bidding fell to Mr. Drew, at £75. The next lot was a beautiful bay mare, called Rosie, the gem among the Clydesdales at Merryton, four years old, bred by Mrs. Barr, Barrangray, sire Garibaldi, gained first prize as a one-year-old at Kelso in 1863, first as a two-year-old at Royal Society's Show, Newcastle, and also at Stirling in 1864, first at Highland Society's Show in Inverness in 1865, and first at Kilbride in 1866. The first offer made was £80, and then £90 and £100, in £10 bids, not the least faltering or vacillation up to £200. The battle now remained between Mr. Drew, the enterprising tenant, and Mr. M'Inlay, the horse-dealer in Glasgow, who was evidently working on commission, and there was scarcely a murmur until the hammer fell at Mr. Drew's bidding of £220—a large sum certainly for a *draught* mare. The same buyer also secured a two-year-old filly, bred by Mr. Pollock, sire Champion, at £73; and another one nearly as good for £66. Mr. Balfour, Balbirnie, Mr. Blanc Kerr, of Castlehill, and Mr. Kirkwood, Killermont, also obtained good horses at prices varying from £35 to £47. The total result of the sale was £4,286.

GREAT CHEESE SHOW AT KILMARNOCK.

The entries of cheese for the last four shows were successively 470, 531, 636, and 647. This year they amount to 754. It is a magnificent display on the tables, and a great credit to the four counties—Ayr, Wigtown, Kirkcudbright, and Dumfries—which contribute to it.

The general quality of the cheese is equal, if not rather superior, to any previous show; and the prize-list shows that the circle of first-rate makers is widening year after year. Mr. James Cowper, Midkelton, Castle Douglas, is the famous man this year. He is first in the gold-medal class for Cheddar cheese; first in the great open class for the four counties and Cantyre, in which there are 100 entries; first in the sweepstake class; and would have been placed first for imitation-Wiltshire, if his cheeses had not been too large. And his cheeses were thus placed by two sets of judges, without communication with each other. This concordance of opinion, though remarkable to people unaccustomed to such work, is very usual at our shows. It is astonishing to see how exactly the notes of the judges correspond, though separately made, in going over hundreds of lots.

Mr. Cowper was very closely pressed, in the gold-medal class, by a veteran maker—Mr. James M'Adam. The judges were so well pleased with Mr. M'Adam's cheese, that they recommended the awarding of a silver medal to him. In the sweepstakes, Mr. White's dairyman, who was the great winner last year, came in second. It was a very near thing between him and Mr. Clark. In this class only one-fourth of the entries were from Ayrshire; and three of the twelve who are named by the judges are Ayrshire competitors.

As usual, the greatest degree of interest is felt in the great class—No. 3—open to all the contributing counties. Ayrshire has made a good appearance in it, by carrying off seven out of ten prizes. We trust it may be taken as an indication of this county coming abreast of Galloway, after having fallen behind for several years. Dumfriesshire has not done much at this show; but if the makers in that county persevere, we doubt not they will benefit by the successful rivalry which has raised so highly the character of the dairies of Wigtown and the Stewartry.

In the classes which are open for cheese of other kinds than Cheddar, the judges remark that the Cheddar character evidently predominates in a great number of the best lots. This is hardly right; but it is not easy to guard against it. The Cheddar practice is more or less adopted by most of the farmers who pride themselves in the idea of adhering to old customs. Some of the so-called Dunlop exhibitors are candid enough to admit this; and they say that many of their competing friends might make similar admissions. There is every degree of crossing, up to the verge of being thoroughbred. These classes add somewhat to the interest which is felt in the show; but we do not see very clearly the propriety of giving prizes in this way for Cheddar cheese, which would not be placed in the regular classes.

Great quantities of cheese have come forward for the cheese fair. There are probably about 250 tons in the sheds. Mr. Templeton, Kilmarnock, has nearly 50 tons in the market. Although the cheese trade has been dull of late, business has begun with animation; and a number of sales have been made before we send off our express. The highest we have heard mentioned is 74s. 8d. per cwt. There are cheese-merchants in attendance from London, Bath, Manchester, Preston, Edinburgh, Glasgow, and other great centres of business.—*Ayr Advertiser.*

SALE OF THE STOWE HEREFORDS.—This sale on Friday, Oct. 19, drew together one of the largest companies ever seen in Herefordshire, there being present not only our county breeders, but many from all parts of the kingdom. The prices obtained, however, for the cows were only moderate, the highest being 30 guineas for Young Bronith, 33 each for Cornflower and Kitty, and 42 for Elegance (Chieftain—Stately). Some of the calves sold well. A Cinderella bull-calf by Chieftain fetched 32 guineas; another Chieftain calf from Catherine, 20 guineas; a Sir Thomas bull-calf from Mistake, 25 guineas; another Sir Thomas bull-calf from Kitty, 31 guineas. Old Chieftain, by Bedstone, fetched 51 guineas. For Sir Thomas (Sir Benjamin—Lady Ann) there was some competition between Mr. Pitt, of Chadnor, and Mr. Rogers, of the Grove, the latter ultimately securing him at the very high figure of 390 guineas! Clansman (Chieftain—Cinderella) went to Mr. Meredith, of Yatton, for 29 guineas; Grander (Chieftain—Grand Duchess) to Mr. Tomkyns Dew for 8 guineas; and Whitney (Sir Thomas—Elegance) to Mr. Goodwin for 100 guineas. The other stock fetched fair prices, and the total result of the sale was satisfactory.

SALE OF MR. G. M. ALLENDER'S STOCK. — This sale of well-bred Shorthorns and Berkshire pigs took place on Tuesday, Oct. 30, at Aylesbury. The cattle did not make high prices, but the pigs sold very well, notwithstanding the unfavourable weather and the late hour at which the business commenced. Fifteen sows averaged £10 each, and of the boars the two ready for use brought respectively 9 guineas and 5 guineas, but the latter was a purchased animal, as was also a sow that only went up to 5 guineas; the home-bred lots having all the call. Mr. Allender is leaving Buckinghamshire, and, as it is rumoured, will now try his hand at farming in America, one of the earliest results of Mr. James Howard's Club paper.

ANNUAL SALE OF FAT STOCK AT MENTMORE.— A sale of 552 fat sheep, by direction of Baron Meyer de Rothschild, took place on Wednesday, Oct. 19, on the premises at Mentmore. The highest prices given were 86s. per head for fine half-bred ewes, and 76s. ditto for Hampshire Down ewes, other fine sheep going at from 70s. to 74s. each. The total amount realised was £1,603 15s., averaging £2 19s. 6d. each. Baron Rothschild was present during the sale. Those who attended the sale noticed that the meadows around the mansion at Mentmore are being covered with Welsh cattle, chiefly for grazing and fattening. During the past year the Baron lost nearly 300 head of cattle at Mentmore and Cheddington by the rinderpest, only 21 cows having been spared.

THE AGRICULTURAL CUSTOMS COMMITTEE OF 1848.—It may occur to a reader who does not know much of farmers that if they want these compensations they should stipulate for them when they take their farms. But a perusal of this report will show that what appears simple and obvious is very difficult. A farmer who went to a landlord's agent to prescribe the new conditions on which he would take a farm would be told that, if he did not choose to take it upon the old conditions, some other farmer would. Improvement must originate with landlords who have intelligence to see what is wanted, and pecuniary means to accomplish it. Notwithstanding the great advance which English agriculture has made since 1848, there are probably many districts which might be benefited by adopting the methods of improvement described in this report, which is also valuable as showing the most hopeful remedy for the ills of Ireland. Both countries want landlords like Lord Yarborough, who transplanted the Lincolnshire tenant-right, with modifications, to the Isle of Wight. Experience has justified the opinion expressed by the committee, that a liberal system of compensation to the outgoing tenant is beneficial to agriculture, to the landlord, and to the farmer; that it leads to great increase in the productiveness of the soil, and to extended employment of the rural population. But any attempt to make the general adoption of such a system compulsory would be met by great practical difficulties, and the committee could do no more than express their hope that it would be adopted by voluntary arrangement between landlords and tenants. This is the only reasonable answer that can be given to the demand for statutory tenant-right, whether in England or in Ireland.—*The Saturday Review.*

THE HEREFORD CHAMBER OF AGRICULTURE.— The first meeting of this society was held at Hereford on Wednesday, Oct. 31, with the object of considering the regulations regarding the cattle traffic. Mr. Duckham, however, who had undertaken to open the subject, was not present, but wrote a letter proposing to adjourn the meeting for a week. Some dissent being expressed to the adoption of this course, it was suggested that, as there were present some members from a distance, it might be convenient to hear the opinions entertained by Mr. Duckham. The meeting, by the narrow majority of one—the numbers being 5 to 4—decided that Mr. Duckham's paper need not be read until the adjourned meeting; and the chairman thereupon handed it to a dissentient to read it for himself if he thought proper to do so. This concluded the business!

THE SCARCITY OF LABOUR.—It is now a quarter of a century since we were all complaining of a redundant population, and crying out for some mode of reducing a plethora which seemed to outgrow all available means of subsistence. Emigration was the remedy most frequently prescribed and most favourably received. And emigration has now been going on until it carries off annually a number of people nearly equal to the annual excess of births over deaths. In other words, the aggregate population of the United Kingdom remains very nearly stationary. Of course this result is mainly due to the absolute decrease in the amount of the Irish population. But this is not irrelevant to the question, which is one of the supply of labour, generally, throughout Great Britain and Ireland. Since 1850 an impetus has been given to every kind of production and every kind of manufactory. New kinds of manufacture have been introduced, and old kinds extended. The demand everywhere is for hands, more hands. Strike after strike attests the insufficient numbers and the compact organization of the operatives. The army shares this want. The recruiting sergeant complains as much as the capitalist. Nor is it only in mills and large establishments, or in the army, that this inadequacy of the labouring population shows itself. The want of domestic servants is more sensibly felt every day. Higher wages are paid than formerly, and less effective service is given. Emigration tells too upon this class. New fields of employment open out for men in the colonies no less than at home. The men, too, who return home, after making some money, for the purpose of marrying, not unfrequently select English maid-servants as their wives. All this tells upon the supply of labour in England. And it will tell far more sensibly in the course of a few years. Emigration begets emigration, and one kind of employment or investment necessitates another. So far from finding our population redundant, we shall soon regard it as stinted.—*The Saturday Review.*

THE SMITHFIELD CLUB.

At a meeting of the Council, held November 7th, 1866, present, Lord Feversham (in the chair), Lord Walsingham (V.P.), Lord Tredegar (V.P.), Major-General the Hon. A. N. Hood, Messrs. J. Clayden, Samuel Druce, Josh. Druce, Thos. Duckham, W. Farthing, Jno. Giblett, C. Howard, R. Leeds, R. Milward, R. Overman, E. Pope, W. Rigden, Henry Smith, Robt. Smith, T. Twitchell, O. Wallis, and B. T. Brandreth Gibbs, Hon. Sec.—

The Council came to the resolution that no steps be taken by the Council of the Smithfield Club to obtain a relaxation of the Orders of Privy Council in reference to the Cattle Plague.

The Council appointed the Judges for the ensuing show.

Mr. John Painter, of Forest Road, Nottingham, was elected a Member of the Council, to fill the vacancy caused by the death of the late Mr. W. Fisher Hobbs.

The Council, in conformity with the bye-laws, prepared the "House-list" of eight members of the Club, whom they recommend for election on the Council to succeed those who will retire by rotation in December next.

The following were elected members of the Club: Joseph Beach, Flour Mills, Dudley; Edmund Beck, Oxwick, Fakenham, Norfolk; Jno. H. Casswell, Laughton, Folkingham; Jas. S. Cocksedge, Stowmarket; Thos. Horley, jun., The Fosse, near Leamington; Alfred R. Howland, Ludesdon House, near Thame; F. C. Matthews, Driffield; W. Wells, Holmewood, Peterborough; Edmund F. Woods, Stowmarket.

REVIEW.

THE FARMERS' ALMANAC AND CALENDAR FOR 1867, being the Third after Bissextile or Leap Year. By CUTHBERT W. JOHNSON, Esq., F.R.S., and WILLIAM SHAW, Esq. London: Ridgway, 169, Piccadilly.

This well-known, useful, and amusing almanac needs but little recommendation with those who have been in the habit of using it in past seasons. Everything requisite in a book of the kind will be found here, and, in addition, much valuable information on subjects connected with husbandry, which if attended to and adopted would lead to satisfactory results. Every operation on the farm has its proper time for its performance, and an *unnecessary* delay is inexcusable. We cannot command the weather or regulate the seasons, but we can "seize Time by the forelock" instead of hanging on behind; and the difference at the end of the season is sure to show itself in the result. The *Farmers' Almanac* reminds the farmer of the proper time to perform all and any of the work on the farm, and is therefore of great value as an assistant to that numerous class who possess short memories, and are apt to allow their opportunities to pass by unimproved. The general information on matters of rural economy is also valuable, and the whole work is written in a lively and pleasing style, which adds much to its acceptability with the public.

FOREIGN AGRICULTURAL GOSSIP.

Some very interesting statistics have been prepared in France to show the progress made in the production of wheat in that country. In 1815, the number of hectares (a hectare is about two acres English) sown with wheat was 4,591,677, and the number of hectolitres secured was 39,460,971, giving an average of 8.59 hectolitres per hectare. In 1858, the number of hectares sown with wheat was 6,639,688, and the number of hectolitres secured was 109,989,747, giving an average of 16.56 hectolitres per hectare (a hectolitre, it may be observed, is 198 lbs. English). It is right to add that 1858 seems to have been an exceptionally good year. Be this as it may, the cultivation of wheat in France appears to have increased during the 43 years ending 1858 to the extent of about 2,000,000 hectares, while the crop secured was three times as large as formerly. Taking a review of four periods of 10 or 11 years each, we find the following average returns: From 1815 to 1825, 10.95 hectolitres per hectare; from 1826 to 1836, 12.35 hectolitres per hectare; from 1836 to 1846, 13 hectolitres per hectare; and from 1846 to 1857, 13.70 hectolitres per hectare. We may add the following data with reference to more recent years:

Year.	Hectares sown.	Hectolitres obtained.
1861	6,754,227	75,116,287
1862	6,881,613	99,292,224
1863	6,918,768	116,781,794
1864	6,839,073	111,274,018
1865	6,891,440	95,431,028

The average yield per hectare was thus: In 1861, 11.22 hectolitres; in 1862, 14.43 hects.; in 1863, 16.88 hects.; in 1864, 16.15 hects.; and in 1865, 13,85 hects. There is thus a continued evident progression, and even if we had not a robust faith in statistics it would be very easy to arrive at a similar conviction, from the thousand-and-one facts of which every one is an eye-witness in the country districts of France. Thus every one admits that the French have increased their artificial meadows, their roots, and their cattle. Every one admits also that the price and rent of land have been increasing in France—at least until recently; and it would be contrary to all elementary notions of rural economy that these facts should not be some the cause and the others the effect of heavier crops of cereals. M. de Lavergne is without contradiction one of those economists who have the most deeply studied these questions, and we may be permitted to be of his opinion when he writes, after having compared the economic situation of 1855 with that of 1865: "A new order of questions seems to open. This time it is no longer production which fails consumption, but rather consumption which does not suffice for production." It has been remarked that the population of France has ceased to increase in the proportions of the period comprised between 1815 and 1858. This is possible. But however it may be, one fact seems established, viz., that in the present state of a French population which is neither rich nor numerous enough to consume every year crops of wheat frequently attaining 100,000,000 hectolitres per annum at the least, it is necessary for France to guard itself against crises of superabundance. Evidently but for the export trade, these crises would be attended with very sad results for agriculture, especially in districts in which, from a want of sufficient capital, cultivators are obliged to sell their crops in order to provide for the most rigorous payments. Commercial liberty seems to have been secured to France as a consequence of the increase in her agricultural production.—We have received some particulars as to the annual shows of fat stock which will take place in France in 1867. These meetings will be held April 9 at Lille, Nancy, Châteauroux, and Nimes, and April 10 at Nantes, Bordeaux, and Lyons. As regards the general meeting at Poissy, it will be held April 17. No important modification has been introduced into the programmes, but it will be remarked that the exhibition of Châteauroux is of recent foundation; so that there will be in 1867 seven state district shows of fat stock instead of six. The amount of the prizes which will be awarded at these meetings is as follows: Beasts, £4,560; cows, £577; calves, £49; sheep, £827 and pigs, £398; making a total of £6,411. The total sum which will be awarded at each meeting will be as follows: Lille, £475; Nancy, £407; Châteauroux, £548; Nimes, £573; Nantes, £575; Lyons, £484; and Poissy, £3,014. This year the total amount of the prizes awarded in French exhibitions of fat stock amounted to £5,879; so that the sum proposed to be awarded in prizes next year shows an increase of £532, as compared with 1866. At Châteauroux, as at the other exhibitions of fat stock in France, there will be a special competition for young beasts, whatever may be their race, and also a competicion for young sheep, without distinction of breed. In order to be admitted to the Poissy show, breeders and graziers must address their declarations to the Minister of Agriculture, at the latest, March 15, 1867.—The cattle plague, which has committed great ravages in the centre of Europe, appears to be in course of diminution. Thanks to the vigour displayed by the superior authorities of the province of Antwerp, the Belgian territories have been almost entirely spared; and, since the commencement of the disease in Holland, the number of centres of typhus, which this authority has stamped out, is estimated at twenty. The epidemic has declared itself in several localities immediately adjoining the Grand Duchy of Baden; and the college of the canton of Bâle, in order to protect the Swiss territory from the contagion, decided that cattle coming from Baden could only enter by railway, and having been submitted to a serious examination. The same disease, which had committed some ravages in Lower Austria and in the Vorarlberg, has diminished at several points, and at others it has entirely disappeared.—We learn with regret the death of Baron d'Herlincourt, Deputy to the Corps Législatif, and Vice-president of the Agricultural Society of the Pas-de-Calais. We have also to record the death of M. Coutanceau, one of the deans of agriculture in the departement of the Charente Inférieure. The Agricultural Society of the Dordogne has awarded its first prize of honour for 1866 to MM. Vallade Frerès, who, adapting their cultivation to the general position of the district, have improved their workings by means of *métayage*. M. Coignet, in a report presented to the society on the subject, states that the Châtenet estate, belonging to MM. Valade, produced its proprietors a profit of £115 in 1865, as compared with £59 in 1846. Here, then, is a *métayage* which has doubled its profits in 20 years, and that without great immobilizations of capital, and almost entirely by the extension of forage well adapted to the soil. The *métayer* excels in breeding stock, and to profit from this aptitude is the great secret of rural improvements by *métayage*.—The *Journal of Agriculture Pratique* gives an engraving of an Algerian cow and a Tuscan beast exhibited by M. Foacier de Ruzé and Sanson, breeders at the Kroub, in the province of Constantine (Algeria), at the Poissy meeting of 1866, and which received prizes on that occasion. In 1865, MM. de Ruzé and Samson also sent beasts for exhibition at Poissy. They possess in the province of Constantine a great working, in which they graze every year 2,500 to 3,000 beasts, and nearly 10,000 sheep, which supply a large butcher's establishment at Constantine, the animals which are not consumed on the spot being forwarded to Marseilles. In thus improving the management of animals, MM. de Ruzé and Samson have succeeded rapidly in improving the Algerian breed of cattle, and in rendering the grazing of cattle a very lucrative industry. It is doubtful, however, whether they can by crossings with the Aubrac and Pyrennéan breeds, as M. Sanson has proposed, obtain equally satisfactory results. M. Chaseley, sub-director of the Grand-Jouan School of Agriculture, has collected some interesting statistical data in illustration of the wool-producing power of Southdown sheep. Thus he states as follows the ratio of the weight of fleeces to the weight of several animals:—Jonas Webb ram, aged 27 months, 3.847 per cent.; Jonas Webb rams, aged 16 months, 6.987 per cent.; Jonas Webb sheep, aged 15 months, 7.101 per cent.; crossed sheep, aged 15 months, 11.871 per cent.; ordinary Southdown sheep, aged 15 months, 7.686 per cent.; Jonas

Webb ewes, aged from 27 months to 7 years, 5.121 per cent.; Jonas Webb ewes, aged 15 months, 6.676 per cent.; Southdown ordinary ewes, aged from 27 months to 6 years, 5.823 per cent.; Southdown ewes, aged 15 months, 7.491 per cent.; crossed ewes, aged 27 months to 8 years, 6.557 per cent.; and crossed ewes, aged 15 months, 9.877 per cent. M. Chazely considers that a great accumulation of fat is unfavourable to the production of wool. He also argues that the Southdown is not a good wool-producing race, and that mixed-bred animals are better in this respect than pure-bred animals. The important question of the prevention of future inundations in France continues to occupy the attention of the Emperor's Government, as well as of the Emperor himself. M. Béhic, Minister of Agriculture, Commerce, and Public Works, announces, in a report addressed to the Emperor, that two great *barrages* have been established—one at Annonay, in the basin of the Rhone, and the other at St. Etienne, or rather at Rochetaillée, in the basin of the Loire.

CALENDAR OF AGRICULTURE.

Plough stubble lands for next year's fallows, in fresh weather. Repair old fences, and make new ones. Continue the cutting of drains so long as the weather allows. Mend roads. Cast up earths for making composts; and collect for manure all earthy and vegetable substances that can be got.

Flood meadows, and lay dry occasionally.

Cut underwoods, and fill up vacancies by planting and layering. Plant all kinds of forest trees, especially ash and oak. Keep all fences in good repair, to prevent trespassing, which is a sure sign of slovenly management.

Raise turnips, and store the bulbs in dry weather. Give the tops to young cattle in the yards, and to the store sheep in the fields.

Early lambs will be dropped during this month, and sooner in some places. Feed the ewes very liberally, and provide good shelter.

During frosty weather, thrash often by machine, and litter the yards evenly and thinly in frequent applications of straw, and best cut into short lengths by the power of the thrashing machinery. Bring lime to be mixed with the earths in compost, and carry stones or tiles where wanted for drains. Carry fuel, timber, and faggots.

The live stock require a constant and vigilant attention, in getting the food regularly in time and quantity, and in having a dry bed and comfortable in the sheds and yards. The steamer must be constantly employed in cooking hays, straws, and roots, for horses, cows, pigs, and poultry, in a fresh, and not in a sour, condition. Give the cattle the turnips from the store pits in stormy weather, but from the fields daily when the season permits. The drains and culverts must all be in open order, to conduct the liquids of the farmery to the tank. The cattle in the yards will eat most comfortably under cover, chiefly in stormy latitudes, through spout-holes in the wall of the outer shed, and in cribs placed longitudinally; or the whole area of the yards may be covered over, like the terminus of a railway.

The farm buildings must be yearly insured by the proprietor; and the crops, animals, and all moveable articles by the farmer. The neglect is most culpable, and an injustice committed, not only against the parties themselves, but to the public at large. The farmers have got an insurance-office, at 3, Norfolk-street, Strand, for their own purposes, and also for general benefit.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Frost may set-in early; and therefore every means of defence for plants in frames, under glasses, and on warm borders, such as matting, littery straw, and fern, ought to be at hand. In this way, late-sown radishes are preserved under straw, which, however, should be raked off in open, sunny weather. Little can be added to the directions of last month. All is contingent; and if the weather be open, there is every probability that it will be wet; and then to trample in, and work ground saturated with water, is only to do mischief.

Sea-kale: Pot and excite a second set of plants. Brick pits and darkened frames, with good linings, would be a great convenience, and prevent much litter.

Asparagus is easily forced upon deep beds of leaves raked from woods and parks, avoiding those of laurels and evergreens generally. The plants should be prepared in proper beds, and selected from the best two or three-year-old stock. Brick pits are the best erections; but good frames set upon leaves, with warm linings, will do well.

FLOWER GARDEN.

Cover the ground with half-decayed leaves, or lay cakes of moss among the shrubs, with edgings of small stones; and brush snow from evergreens before the sun shines hot upon them—alternate meltings and freezings ruin foliage.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

November has passed, as it generally does, with variable and foggy weather; but there have been desolating floods in the northern counties, doing a mischief unknown for thirty years, and leading to some loss of life; while on the night of the 20th there was a frost of 6 degrees, leading to the impression that the weatherwise who had predicted a hard winter were about to see the fulfilment of their predictions. On the week of the floods it was remarkable that the extraordinary meteorological display occurred, suggesting the idea that it had something to do with the violent storms. Though field labours were occasionally suspended, a general progress in sowing has been made whereever practicable; and the plants that were up early have made favourable progress, and there is no fear this season that much ground will be unoccupied. The course of prices has been upwards, especially in the third week; but there were reactionary symptoms on the last Monday, leaving a previous gain of about 3s. quite uncertain as to its permanency, though in the long run we still have the impression that should it be lost for a time—say, up to Christmas—it will eventually be more than recovered. An average season of home-growth, it has been proved, by the course of half a century, is not enough for this country's wants; but who, after the short markets we have had for months, after a material rise, can believe that this year's harvest reaches so far? Nothing has occurred in France to invalidate the reiterated reports that her yield is one-fourth below the usual amount; and, what is more confirmatory as to the failure of liberal foreign supplies for the future, is the late important announcement in credible quarters that the teeming alluvial soils of America this season will scarcely exceed half an average growth. Such reports, if true, would have been sufficiently alarming, but for the fact that maize has been more than usually abundant; yet a rise in this grain of 4s. per qr. at New York, at a time when it was thought every available vessel would be taken up for its export to Europe, confirms the bad account of the wheat crop, and so maize must be extensively used as its substitute. Besides this, it appears this Indian corn has been seriously lessened in bulk by heavy rains and sharp frosts. To the Baltic therefore and Southern Russia we must look for the future, as the cultivation of cotton in Egypt has cut off this source, which was the former dependence of Imperial Rome in times of dearth. But in the appropriation of these sources we must throughout the entire season meet the competition of France; and it is a momentous question whether the supplies of this year's produce (for there is scarcely any old corn left) will be equal to the demand, and be it remembered, moreover, that all corn has followed in the wake of wheat. The following were the recent quotations of the several places named: White native wheat at Paris was worth 68s. per qr., red to 66s., red in Belgium 62s., Polish in Amsterdam 70s., Zealand white at Rotterdam 62s., good red at Hambro' 62s., the same at Stettin 56s., Rostock 58s., for the best high-mixed at Dantzic 70s., cost and freight included. In parts of Spain it was more moderate—say, 53s. at Valladolid for white. At Odessa Polish red 43s., at Galatz 42s.; at New York middling red spring—say, Chicago and Milwaukie No. 2—55s. per 480lbs., amber fine 74s. 6d., extra fine white Michigan 80s.

The first Monday in Mark Lane commenced on fair supplies of English wheat, with liberal arrivals from abroad. The show of samples from Kent and Essex during the morning was moderate, and the general condition not very prime. Millers then seemed to entertain the notion that the market was under their power, and very low bids were made in the early part of the day, which were instantly declined by factors; but as time wore on, some sales at the Kentish stands were made at a reduction of 2s. per qr., and this seemed to set the price of the day, being generally accepted by Essex factors. Holders of foreign, notwithstanding good arrivals from Russia, were in no disposition to give way, as the ports were expected soon to close, so very little business was transacted. In cargoes afloat no difference was noted. The country markets this week were very little disposed to follow London, though a general dulness was observable, with some reduction in low qualities; while several places accepted 1s. per qr. decline on good samples, as was the case at Bury St. Edmunds, Salisbury, Rugby, Leighton Buzzard, and Wolverhampton, and in a few instances the reduction was 2s. per qr. At Edinburgh, Glasgow, and Aberdeen business was dull, but prices not lower. With deliveries short at most of the Irish markets, there was no quotable change.

On the second Monday the English supplies were less, and the foreign were unusually small. The show of samples this morning at the Essex and Kentish stands was extremely limited, and seemed to express the dissatisfaction of farmers at the previous week's decline. A reaction then ensued to the full extent of 1s. per qr.; but business was by no means lively. The principal business was in foreign, and in several instances rather more money was made of Russian and Baltic descriptions. Cargoes afloat also were the turn dearer, with fair sales. This was a very peculiar week. The earlier country markets were many of them heavy, or, at most, only reported an advance of 1s.: but, before the week had ended, a brisk trade sprung up, with an advance 2s. to 3s. per qr., in which London participated on Friday, with a still larger proportionate advance on maize, in consequence of advices from New York. At Glasgow, the rise was not over 1s.; but at Edinburgh it was 1s. to 2s. Wheat at Dublin was 1s. per barrel dearer; but at Cork, only more firmness was noted; and this was the case at Waterford.

The third Monday commenced on a moderate English supply, with a fair quantity of foreign. The number of samples exhibited on the Kentish and Essex stands was limited; and Friday's extraordinary advance was more than confirmed, sales being freely made at 3s. to 4s. per qr. beyond the quotations of the previous Monday. There was a large attendance from the country, and a similar advance was realized on foreign; but the sale of the higher qualities was limited, and slow. An enormous business was transacted in floating cargoes, 2s. per qr. more money being very freely paid. The country markets this week in very few instances came up to the London advance. Some were only 1s. dearer, more were fully 2s., and very many were fully 2s.; but the numbers lessened as the advance was greater, say 3s., and but few came up to 4s. per qr. Liverpool was 6d. per cental dearer on Tuesday, and fully as dear on Friday. At Glasgow, wheat rose 1s. to 1s. 6d. per boll, and at Edinburgh 2s. per qr. The movement was not so rapid or decided in Ireland: at Cork, it did not exceed 6d. to 1s. per barrel of 280lbs.

The fourth Monday commenced on a fair English, and very liberal foreign, arrivals. The morning show from Kent and Essex was better than of late, especially from the latter county. This, together with the free supplies of foreign and the near approach of Christmas, when payments must be made for this day's purchases, was quite against the trade. Millers for a long time held quite aloof, but eventually made some offers of 2s. reduction on the previous rates, which not being accepted, the bulk was held over. Some sales of Russian were made at 1s. decline; but Baltic qualities were not offered lower.

The imports into London for four weeks were 25,262 qrs. English wheat, 73,090 qrs. foreign; against 23,207 qrs. English, 48,195 qrs. foreign for the same period in 1865. The London exports were 2,400 qrs. wheat, 156 cwts. flour. The imports into the kingdom for four weeks ending 17th November were 1,524,573 cwts. wheat, 263,657 cwts. flour. The London averages commenced at 59s. 2d., and closed at 62s. 1d.: the general average commenced at 52s. 6d., and closed at 56s. 7d.

The flour trade has fluctuated as to values in the course of the month, but, on the whole, has gained to the extent of 4s. per sack, both in country, town-made, and foreign qualities. The improvement in American barrels has not been to the same extent, say, 2s. per barrel, as they were held relatively high previously, from the great scarcity of good samples and the improbability of further supplies from the high rates paid at New York. Norfolks have passed from 42s. to 46s., town qualities from 53s. to 57s.; fine barrels are quoted 34s., and anything extra might bring 35s. or more in retail. For extra States quality, white extra Missouri were worth 53s. at home. The imports into London for four weeks were 77,573 sacks country sorts, 45,737 sacks 11,824 barrels foreign; against 80,982 sacks English, 1,524 sacks 3,838 barrels foreign, in 1865.

The barley trade, commencing at very high rates, has about maintained the value of malting qualities all through the month, 56s. being demanded for anything very extra, though such a price could not be quoted, but medium and low sorts have rather given way, say 1s. to 2s. per qr., more especially on the last Monday, when the foreign supplies were largest. There are signs that prices have already reached their highest, and had it not been for the sudden advance in maize, we believe that rates ere this would have declined more decidedly. The imports into London for four months have been 21,109 qrs. British, 58,929 qrs. foreign, against 27,503 qrs. British and 11,870 qrs. foreign in 1865.

Malt has fully maintained the price at which it commenced, old stocks being small, and some of the new samples very fine.

The largest supplies of oats were on the first and fourth Mondays. On the first, new qualities rather gave way; on the second, with small supplies, they were stationary, buyers waiting for further arrivals, but these not coming, the third Monday was remarkable for a rise of 1s. to 1s. 6d. per qr. This advance was, however, scarcely sustained on the last Monday, and future rates must very much depend on the character of the winter. If early and severe enough to shut out Russian and Baltic supplies, oats may advance further; but should quantities be pushed off in mild weather, we may see a reaction downwards, but the lateness of the harvest in Scotland and its unsatisfactory character as to the quality and condition of the corn, indicates a dear season all through the winter months. The imports into London for four weeks were 9,146 qrs. English, 455 qrs. Scotch, 2,370 qrs. Irish, and 133,607 qrs. foreign, against 10,221 qrs. English, 1,630 qrs. Scotch, 2,958 qrs. Irish, and 138,629 qrs. foreign in 1865.

All good hard beans have been in demand through the month, scarcely any new coming up to the requirements of buyers, prices have therefore further improved 1s. to 2s. per qr.; but as some this year have been grown in Egypt, all will depend on our supplies thence, which, very probably, will fall far short of former years, as cotton has continued to be extensively grown in that country, and has paid well. The imports into London for four weeks, were 4,275 qrs. English, 8,713 qrs. foreign, half of which were received in the last week, against 5,399 qrs. English and 2,088 qrs. foreign in 1865.

Peas during the month have very little altered in value, but the tendency has been upward, to the extent of 1s. per qr., more perhaps in consequence of the advance in maize than anything else, this latter article being now extensively used for feeding horses, as well as old white peas. The rates of fine boilers are relatively the lowest, and have the best chance of improvement in consequence, especially should the winter prove severe, and occasion a large demand for soup. The imports into London for four weeks were 3,643 qrs. English, 1,641 qrs. foreign, against 3,886 qrs. English and 5,677 qrs. foreign for the same period in 1865.

Linseed, with a continuance of short supplies, has maintained its high price, but as is usual, under such circumstances, the demand has been lessened, and the exports have been small. English cakes have been in constant demand at fully previous rates, but foreign have not sold so freely.

The seed trade has generally been pointing upwards, more especially red cloverseed, the crop being very deficient here, and under an average in France. White seed has also hardened in value, fine qualities being scarce. Trefoil has been steady. Canary rather dearer. Winter tares have remained dull, and but in limited demand.

CURRENT PRICES OF BRITISH GRAIN AND FLOUR IN MARK LANE.

	Shillings per Quarter.	
WHEAT, Essex and Kent, white... old 58 72...new	52	to 67
„ „ „ red ...... „ 56 67... „	50	64
Norfolk, Lincoln, and Yorkshire, red	50	64
BARLEY ...35 to 40...Chevalier, new	42	53
Grinding...32 36...Distilling	40	45
MALT, Essex, Norfolk, and Suffolk ...new	72	76
Kingston, Ware, and town-made ... „	72	76
Brown ... „	58	65
RYE	31	34
OATS, English, feed 24 to 31...Potato	28	36
Scotch, feed ...24 31...Potato	30	36
Irish, feed, white 22 26...Fine	26	31
Ditto, black ...21 25...Potato	27	32
BEANS, Mazagan ...42 45...Ticks	42	45
Harrow ...45 50...Pigeon	48	52
PEAS, white, boilers..41 45 Maple 40 to 43 Grey, new	38	40
FLOUR, per sack of 280lbs., Town, Households	52	57
Country, on shore ...44 to 47 „	47	51
Norfolk and Suffolk, on shore	44	46

FOREIGN GRAIN.

	Shillings per Quarter.	
WHEAT, Dantzic, mixed ...61 to 65...old, extra	66	to 73
Königsberg ...60 64...extra	66	68
Rostock ...57 66...fine	66	68
Silesian, red...56 62...white	60	67
Pomera., Meckberg., and Uckermrk. ...red old	59	65
Russian, hard, 52 to 57...St. Petersburg and Riga	56	60
Danish and Holstein, red	55	60
French, none...Rhine and Belgium	59	65
American, white 00, red winter 00 to 00, spring	00	00
BARLEY, grinding 30 to 32 ....distilling and malting	37	41
OATS, Dutch, brewing and Polands 22 to 32...feed	21	27
Danish and Swedish, feed 24 to 30.... Stralsund	24	30
Canada 22 to 25, Riga 24 to 27, Arch. 23 to 26, P'sbg.	24	29
TARES, Spring, per qr. ...... small 00 ...... large	00	00
BEANS, Friesland and Holstein	40	44
Königsberg ...42 to 46...Egyptian	42	43
PEAS, feeding and maple...38 40...fine boilers	40	44
INDIAN CORN, white...36 40...yellow	36	39
FLOUR, per sack, French..45 50...Spanish, p. sack	46	50
American, per brl....27 30...extra and d'ble.	31	34

IMPERIAL AVERAGES

For the week ended Nov. 17, 1866.

Wheat	69,649 qrs.	56s. 7d.
Barley	78,677½ „	45s. 8d.
Oats	5,302½ „	23s. 6d.

COMPARATIVE AVERAGES.

	WHEAT.			BARLEY.			OATS.		
Years.	Qrs.	s.	d.	Qrs.	s.	d.	Qrs.	s.	d.
1862...	65,475½ ...	49	4	75,247½ ...	36	4	12,672½ ...	21	5
1863...	87,492½ ...	39	10	83,522½ ...	34	0	8,017½ ...	18	9
1864...	71,616½ ...	38	9	77,499½ ...	30	1	5,023½ ...	19	11
1865...	71,570½ ...	46	11	63,816½ ...	33	7	5,240½ ...	22	9
1866...	69,649 ...	56	7	78,677½ ...	45	8	5,302½ ...	23	6

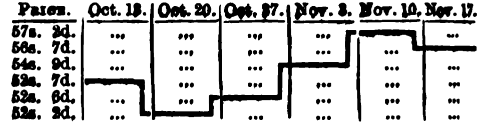
AVERAGES

For the last Six Weeks:	Wheat.		Barley.		Oats.	
	s.	d.	s.	d.	s.	d.
Oct. 13, 1866	52	7	43	1	23	0
Oct. 20, 1866	52	2	42	11	22	11
Oct. 27, 1866	52	6	41	8	22	10
Nov. 3, 1866	54	9	43	10	23	8
Nov. 10, 1866	57	2	44	9	23	5
Nov. 17, 1866	56	7	45	3	23	6
Aggregate Average	54	4	43	5	23	2
Averages last year	46	11	33	7	22	9

LONDON AVERAGES.

Wheat	3118 qrs.	62s. 1d.
Barley	720 „	49s. 0d.
Oats	— „	00s. 0d.

FLUCTUATIONS in the AVERAGE PRICE of WHEAT.



PRICES OF SEEDS.

BRITISH SEEDS.

Mustard, per bush., brown 15s. to 17s. white	12s.	to 15s.
Canary, per qr.	58s.	63s.
Cloverseed, red	00s.	00s.
Coriander, per cwt.	18s.	20s.
Tares, winter, new, per bushel ...5s. 0d.		5s. 6d.
Trefoil	22s.	25s.
Ryegrass, per qr.	22s.	24s.
Linseed, per qr., sowing 68s. to 72s., crushing	66s.	70s.
Rapeseed, per qr.	58s.	60s.
Linseed Cakes, per ton	£10 10s.	to £12 0s.
Rape Cake, per ton	£5 0s.	to £5 10s.

FOREIGN SEEDS.

Coriander, per cwt.	18s.	to 20s.
Cloverseed, red 52s. to 65s., white	72s.	84s.
Trefoil	19s.	22s.
Ryegrass, per qr.	18s.	20s.
Hempseed, small 38s. per qr., Dutch	40s.	42s.
Linseed, per qr., Baltic 64s. to 68s...Bombay	69s.	70s.
Linseed Cakes, per ton	£10 0s.	to £12 0s.
Rape Cake, per ton	£5 0s.	to £5 10s.
Rapeseed, Dutch	58s.	60s.
Carraway „	40s.	42s.

HOP MARKETS.

BOROUGH, Monday, November 26.—The upward movement in the foreign markets has materially influenced our trade during the past week, by increasing the demand for all Hops of the last growth, quotations of which are generally from 4s. to 6s. higher, and as the stock on hand is now very light another advance in prices appear inevitable. Reports from Bavaria and Bohemia speak of a further improvement in prices, and it is evident that from the exhaustion of the growth very few orders can now be executed for this market. The Belgian market is firm. New York advices to the 13th inst. state that the Hop market is very firm, and without change, 62c. to 65c. being the value of prime and choice samples of the new crop. Yearlings and olds are not in request.

Sussex	150s.	to	168s.
Weald of Kent	150s.	to	180s.
Mid and East Kent ...	168s.	to	231s.
Farnham and Country ...	170s.	to	225s.
Yearlings	105s.	to	150s.
Olds	50s.	to	80s.

WORCESTER HOP MARKET, (Saturday last.)—With a better feeling on this market to-day, and a very short supply of new hops on offer by planters, rather improved prices are obtained, everything offering finding buyers. Since our last report the public scale marks 117 pockets new and 38 pockets yearling as having been weighed. Choice golden and class Mathon sorts £10 to £11, fine Coopers and best mixed white bine sorts £9 to £10 5s., fine Mayfield grapes £8 8s. to £9; red bines and mismanaged samples at irregular prices—all per cwt., cash at the scale.

FOREIGN HOP INTELLIGENCE.—The last intelligence from Nuremberg is of the date of the 20th inst., and is to the effect that but short supplies were at market. Higher prices ruled for this reason, and because the stores in the various villages are nearly cleared out. An active tone prevailed, as it was considered that the market could not be influenced by importations of foreign hops. The quotations were from 100 to 145 florins (£8 6s. 8d. to £11 18s. 4d.), the last price being for Spalt hops. In the week preceding the 18th inst. there was much briskness in the Spalt market, as producers had yielded somewhat from their high pretensions, and the buyers had become convinced that stocks were low. Prices in the country have remained much the same. In some places as much as 180 florins have been paid. Many places are nearly cleared out. At the Munich market on the 17th 1,216 cwts. were on sale, but only 458 were disposed of. There was symptoms of a disposition to purchase, but the large arrivals had the tendency to lower prices. Hops from Upper or Lower

Bavaria realised from 134 to 152 florins (11 3s. 4d. to £12 18s. 4d.) As the brewers around Prague have not yet laid in all their stocks, and as visits are still being paid by dealers to the hop-growing districts, high prices still prevail; nothing less than 110 florins (£12) being paid. At Saatz, in Bohemia, there was no change in the markets; for the finest light samples as high as 200 florins, Austrian currency, equal to £20, have been paid, for red sorts 155 florins (£15 10s.), and for green 100 to 115 florins (£10 to £13). But few hops had been brought to market at Bischweeier up to the latest date, and consequently but but few transactions are to be recorded; prices were firm. At Alost, in Belgium, on the 17th inst., a large quantity was disposed of at 140 to 150 francs (£5 16s. 8d. to £6 5s.)

POTATO MARKETS.

SOUTHWARK WATERSIDE.

LONDON, Monday, Nov. 26.—During the past week the arrivals, both coastwise and by rail, have been liberal, and a fair supply from France. The trade rather dull towards the end of the week, at the following quotations:

Yorkshire Flukes	per ton	100s. to 130s.
„ Regents		90s. to 120s.
Lincolnshire Regents		90s. to 110s.
Dunbar and East Lothian Regents		100s. to 130s.
Kent and Essex Regents		90s. to 120s.
Perth, Forfar, and Fife Regents ...		100s. to 110s.
„ Rocks		90s. to 95s.
French whites		80s. to 85s.

BOROUGH AND SPITALFIELDS.

LONDON, Monday, Nov. 26.—Coastwise, as well as by rail, the arrivals of potatoes have been on a liberal scale. The trade, generally, presents the same appearance as at the date of our last report, fine parcels being readily disposed of at full quotations, whilst in inferior qualities next to nothing is doing. Last week's import amounted to 234 bags, 1,140 sacks from Dunkirk; 10 bags Hamburgh; 4 sacks Brussels; 15 baskets Rotterdam; 50 tons St. Brieux; 498 sacks Dieppe; 8 casks Bremen; 94 tons Dahouet; 5 packages Harlingen; and 42 tons from Jersey.

Yorkshire Regents	100s. to 130s. per ton.
Flukes	110s. to 130s. „
Kent and Essex Regents.......	100s. to 130s. „
Scotch Regents..................	110s. to 140s. „

PERTH POTATO MARKET.—The inquiry was not so brisk last week, and prices were rather in favour of buyers. Best sorts fetched 15s. 6d. to 16s. 6d. per boll of 5 cwt. Rocks and other inferior kinds 12s. to 13s. Retail prices 11d. to 1s. per peck of 28lbs.

PRICES of BUTTER, CHEESE, HAMS, &c.

BUTTER, p. cwt.—	s.	s.	CHEESE, per cwt.—	s.	s.
Friesland	112 to	114	Cheshire	72 to	84
Jersey	94	110	Dble. Gloucester......	74	78
Dorset..................	128	132	Cheddar..................	76	84
Carlow..................	—	—	American	66	74
Waterford	—	—	HAMS: York............	90	98
Cork.....................	—	—	Cumberland............	90	98
Limerick...............	—	—	Irish	—	—
Sligo.....................	—	—	BACON:—		
Fresh, per doz., 12s. 0d. to 16s. 0d.			Wiltshire	64	68
			Irish, green	56	60

ENGLISH BUTTER MARKET.

LONDON, Monday, Nov. 26.—The character of our trade is slow, especially for the lower qualities.

Dorset, fine	130s. to 132s. per cwt.
Devon	110s. to 112s. „
Fresh	12s. to 17s. per dozen lbs.

CORK BUTTER EXCHANGE, (Saturday last.)—The supplies this week amounted to 10,213 firkins salt and 500 mild, showing an excess of 1,000 over last week. The mildness of the weather and the heaviness of the English markets will operate against an advance in prices. The demand was languid here during the week, although the tendency of prices was upwards. Since Monday first rose from 111s. to 113s., seconds from 103s. to 104s.; but fifths fell from 73s. to 68s.; mild-cured quotes to-day from 102s. to 124s.

CREWE CHEESE FAIR.—There was a large pitch. The demand was rather dull, and prices were slightly lower. Fair qualities ranged from 65s. to 70s., and better kinds from 75s. to 80s.

GLASGOW, (Wednesday last.)—The supply of cheese was good, and the market largely stocked. Business was very slow, only about six tons having passed the weigh-house scales. High prices asked for fine, but so little doing, prices may be called nominal. We give former quotations: Dunlop, prime 65s. to 68s., secondary 56s. to 63s.; Cheddars, prime 70s. to 74s., secondary, 65s. to 68s.; skim milk 26s. to 29s.

NEWGATE AND LEADENHALL POULTRY MARKETS.—Turkeys 3s. 6d. to 8s., Geese 5s. to 7s. 6d., ducks 2s. to 3s., tame rabbits 1s. 3d. to 1s. 10d., wild ditto 1s. to 1s. 4d., pigeons 7d. to 9d., hares 2s. 9d. to 3s. 6d. each, pheasants 3s. 6d. to 4s. 6d., partridges 2s. 6d. to 3s. 6d., grouse 2s. to 3s. 6d. per brace, Surrey fowls 5s. to 9s., ditto chickens 4s. to 6s., barn-door fowls 4s. to 6s. per couple; English eggs 14s, French 10s. per 100, fresh butter 1s. 1d. to 1s. 5d. per lb.

COVENT GARDEN MARKET.

LONDON, Saturday, Nov. 24.

Autumnal produce of most kinds continues plentiful. Pineapples are still abundant. The usual varieties of pears in season are also sufficient for the demand. Grapes, both hothouse and Spanish, are still arriving in large quantities, as are likewise new oranges which are selling at from 4s. to 8s. per 100. Prickly pears and Pomegranates may also be had; the former fetch 2s. 6d. per dozen, and the latter from 3s. to 6s. per dozen. Kent cob nuts maintain last week's prices. Vegetables continue abundant. Portugal onions realise from 6s. to 12s. per 100. Flowers chiefly consist of orchids, chrysanthemums, dahlias, pelargoniums, fuchsias, mignonette, and roses.

FRUIT.

	s.	d.		s.	d.		s.	d.		s.	d.
Apples, ℔ bushel......	4	0	to	8	0	Chestnuts, ℔ bush.	14	0	to	20	0
Figs, ℔ dozen	0	0		0	0	Walnuts, ℔ bushel	12	0		20	0
Grapes, ℔ lb.............	2	0		6	0	Melons, each...........	3	0		6	0
Lemons, ℔ 100	6	0		10	0	Pears, ℔ dozen.........	2	0		6	0
Nuts, Cob, per 100lbs.	65	0		70	0	Pine Apples, per lb.	3	0		6	0

VEGETABLES.

	s.	d.		s.	d.		s.	d.		s.	d.
Artichokes, per dozen	2	0	to	4	0	Mushrooms, ℔ pottle	1	6	to	2	0
Asparagus, p. bundle.	0	0		0	0	Must. & Cress, ℔ punn.	0	2		0	0
Beans, Scar., ℔ ½ sieve	0	0		0	0	Onions, ℔ bushel	3	0		3	6
Beet, per dozen	1	0		2	0	Pickling, per quart	0	0		0	0
Brocoli, per bundle ...	0	0		0	0	Parsley, per ½ sieve...	1	6		2	0
Cabbages, per dozen...	1	0		2	0	Parsnips, per dozen...	0	0		0	0
Carrots, per bunch ...	0	4		0	6	Peas, per quart	0	0		0	0
French, per bunch,	0	0		0	0	„ per bushel	0	0		0	0
Cauliflowers, per doz.	2	0		6	0	Potatoes, York Regents, per ton	90	0		130	0
Celery, per bundle ...	0	9		1	6	Rocks, per ton.........	80	0		100	0
Cucumbers, each	0	9		1	0	Flukes, per ton	110	0		140	0
Endive, per score	1	0		1	6	Kidneys, per cwt......	6	0		10	0
Garlic & Shallots, ℔ lb.	0	8		0	0	Radishes, per 12 bund.	1	0		1	0
Herbs, per bunch	0	6		0	0	Savoys, per dozen	0	0		0	0
Horseradish, ℔ bundle	2	6		4	0	Sea Kale, per punn. ...	3	0		3	6
Leeks, per bunch	0	3		0	0	Spinach, per bushel ...	2	0		3	0
Lettuces, per score ...	1	0		1	6	Turnips, per bunch ...	0	3		0	0
Mint, per bunch	0	3		0	4						

HAY MARKETS

LONDON, Saturday, Nov. 24.

SMITHFIELD.—A moderate demand.
CUMBERLAND.—Trade steady.
WHITECHAPEL.—Trade quiet.

	Smithfield.				Cumberland.				Whitechapel.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
MEADOW HAY, ...	65	0	86	0	65	0	88	0	60	0	85	0
CLOVER	90	0	115	0	90	0	115	0	90	0	115	0
STRAW	36	0	44	0	38	0	45	0	36	0	44	0

BRISTOL, Friday, Nov. 23.—Hay from 90s. to 95s. per ton. Straw from 2s. 4d. to 2s. 10d. per doz.

BIRMINGHAM, Monday, Nov. 19.—Hay, old, £3 10s. to £4 10s. per ton. Straw, 3s. to 3s. 4d. per cwt.

OIL MARKET.

OILS.

Olive, Florence, ½ chests	£1	4	0	to	0	0	0
Lucca	1	0	0		0	0	0
Gallipoli, per 252 gallons..............	62	0	0		0	0	0
Spanish	58	0	0		60	0	0
Linseed, per cwt.	1	17	9		0	0	0
Rape, pale...............	2	3	6		2	4	0
Brown	2	1	0		2	1	6
Cod, per tun...........	49	0	0		50	0	0
Seal, pale	48	0	0		0	0	0
Brown, yel., &c.	0	0	0		0	0	0
Sperm	126	0	0		127	0	0
Head Matter............	126	0	0		127	0	0
Southern	45	0	0		0	0	0
Cocoa Nut, per cwt	2	8	0		3	0	0
Palm	2	2	0		2	4	0

RESIN.

French....................	£0	6	0		0	15	0
American	0	7	0		0	21	0

PITCH.

British, per cwt....	£0	5	6	to	0	0	0
Archangel	0	10	0		0	0	0
Stockholm.............	0	12	0		0	0	0

TURPENTINE.

French	£2	2	6	0	0	0
American	2	0	6	2	1	6
Rough	0	9	0	0	9	9

TAR.

American	£0	0	0	0	0	0
Archangel	0	15	0	0	0	0
Stockholm	0	14	0	0	0	0

WHALEBONE.

Greenland, full size, ton........................	£525	£0
South Sea	410	0

TIMBER.

LONDON, Saturday, Nov. 24.

The market is well supplied with timber. The trade is dull, at about late rates.

BALTIC FIR TIMBER. Per load 50 cubic feet.	s.	d.		s.	d.
Riga	57	0	to	60	0
Dantzic and Memel, Crown	75	0		85	0
Best middling	65	0		73	0
Good middling & second	55	0		65	0
Common middling	45	0		50	0
Small, short, and irregular	40	0		50	0
Stettin	45	0		55	0
Swedish	37	0		42	0
Small	35	0		37	0
Swedish & Norway balks	30	0		38	0
AMERICAN PITCH PINE.					
United States	0	0		0	0
BALTIC OAK TIMBER.					
Memel, crown	110	0		130	0
Brack	80	0		100	0
Dantzic and Stettin, Crown	90	0		120	0
Brack & unsquar'd	50	0		70	0
WAINSCOT. Per log 18 cubic feet.					
Riga, crown	90	0		105	0
Brack	70	0		80	0
Memel and Dantzic, Crown	75	0		95	0
Brack	55	0		65	0

DEALS AND BATTENS. Per Petersburg standard hundred.	£	s.	£	s.
Archangel & Onega	12	0	14	0
Seconds	9	0	10	10
Petersburg	10	0	12	0
Wyburg	8	10	9	0
Finland and hand-sawn Swedish	7	0	8	0
Petersburg & Riga white deals	8	0	9	0
Memel and Dantzic, Crown red deals	12	0	13	0
Brack	8	0	9	0

	£	s.		£	s.
Christiana & Sannesund deals, white and yellow	12		to		
Second do.	9	0		10	0
Dram & Frederickstadt battens, do.	8	10			0
Dram 6½-inch do.	7	0		8	0
Gothenb'g, gd stocks	9	10		10	0
Common	8	10		9	0
Gefle and Swedish 14-feet deals	9	10		10	10
Swedish deals and battens, long mill-sawn	9	0			10
Dantzic, cr'wn deck, per 40-feet 3-inch	1	0		1	0
Brack	0	12		0	18
LATHWOOD. Per cubic fathom.					
Petersburg	6	0		7	0
Riga, Dant., Memel, and Swedish	5	0		6	0
FIREWOOD. Per cubic fathom.					
Swedish, red deal ends	3	15		4	0
Norway, red & white boards	3	0		3	10
Rounds and slabs	2	15		3	0
OAK STAVES Per mille pipe.					
Memel, crown	150	0		205	0
First brack	130	0		160	0
Dantzic, Stettin, & Hambro' full-siz'd crown	150	0		180	0
Canada, stand. pipe	85	0		90	0
Puncheon, ℔ 1,200 pieces	24	0		26	0
Bosnia, single brl., ℔ 1,200 pieces	25	0		27	0
United States, pipe	30	0		55	0
Hogshead, heavy and extra	30	0		40	0
Slight	22	0		26	0

FLAX, HEMP, COIR, &c.

LONDON, Saturday, Nov. 24.

There is a good demand for flax, at fully late prices. Hemp is firm, at full currencies. Jute and Coir goods are firm, at full quotations.

	£	s.		£	s.
Hemp, Petersburgh clean, per ton	33	0	to	33	10
Outshot	31	0		0	0
Half-clean	29	0		0	0
Riga, Rhine	35	0		0	0
Manilla	45	0		55	0
East Indian, Sunn	14	0		21	0
Jute	7	5		21	0

	£	s.	£	s.
Coir yarn	28	0	65	0
Junk	27	0	31	0
Fibre	22	0	48	0
Flax, Riga	0	0	0	0
St. Petersburgh, 12 head	40	0	45	0
9 head	30	0	35	0
Egyptian	0	0	0	0

BARK, &c.

LONDON, Saturday, Nov. 24.

	£	s.		£	s.
English, per load of 45 cwt. delivered in London	15	10	to	17	0
Coppice	16	0		17	0
Dutch, per ton	5	0		6	0
Hambro'	5	0		6	0
Antwerp Tree	6	10		7	0
Do. Coppice	7	0		7	10
French	0	0		0	0
Mimosa Chopped	8	0		8	10
Do. Ground	9	0		9	10
Do. Long	7	0		8	0

	£	s.		£	s.
Cork Tree, Barbary	6	0	to	6	10
Do. Sardinian	10	0		10	10
Valonia, Smyrna	16	0		22	0
Do. Camata	16	0		22	0
Do. Morea	15	0		9	0
Terra Japonica:—					
Gambier in bales	23	0		23	5
Ditto free cubes	30	0		30	10
Cutch	28	0		32	0
Divi Divi	12	0		13	10
Myrabolams	10	0		15	0
Sicily, Sumach, p. cwt.	18	0		26	0

ENGLISH WOOL MARKET.

CITY, Monday, Nov 26.—The transactions in all kinds of English wool, both for home use and export, have been very moderate since our last report: in prices, however, we have no change to notice. The public sales of colonial wool were progressing slowly, on easier terms.

Current Prices of English Wool.		s.	d.		s.	d.
Fleeces—Southdown hoggets	per lb.	1	7½	to	1	8½
Half-bred ditto	,,	1	9½		1	10½
Kent fleeces	,,	1	8		1	9
Southdown ewes and wethers	,,	1	7		1	8
Leicester ditto	,,	1	7		1	9
Sorts—Clothing	,,	1	6		1	10½
Combing	,,	1	6½		2	0

BRADFORD WOOL MARKET, (Thursday last.)—There is at length, for the first time for two months, an improved feeling in the market. Staplers have had inquiries from spinners, who are testing prices with a view of determining whether they can accept certain low offers that are made to them. A little more wool has changed hands, but only a little. The chief improvement is a matter of feeling. Some men who have been perniciously influencing the market by forcing cheap wool upon it have terminated their career for the present, and honest traders breathe more freely. Prices, too, at last are not lower than they were the previous market day. It is hoped there is something like a basis established. The following are about the rates current for good average Lincoln wool: Hoggs 1s. 10½d., wethers 1s. 8d. per lb.—*Bradford Observer.*

LEEDS (English and Foreign) WOOL MARKETS.—There is not any important change either in price or demand for English wool. The fall in combing wool has been considerable during the last two months; and it can hardly be expected to go much lower, unless the mills should run shorter time. Colonial and other clothing wools are in moderate demand without change of price, except in very inferior sorts.

GLASGOW WOOL MARKET, (Saturday last.)—There is very little change in this wool market. The tone is rather better, but little actual business is doing. Buyers only operate for immediate wants, and to the most limited extent.—F. H. McLeod.

BRESLAU WOOL REPORT, N[illegible].—We had again a fair attendance of home and foreign manufacturers and combers, who have been actively buying of all descriptions at very remunerative prices. The chief demand was exhibited for the fine and superfine qualities of Posen and Silesian clothing wools at from 85 to 100 thalers per cwt., which continued in their rising tendency. Transactions, however, in these kinds were only limited, owing to the scantiness of provisions. Sales of middle fine qualities of Volhynian, Polish, and Hungarian wool were on a larger scale, and composed the bulk of the quantity disposed of. The latter have been raising at from 65 to 73 thalers per cwt. The general opinion for our article is a very favourable one, as manufacturers continue to be well employed, and provisions in all staple places are very moderate, a further improvement may therefore be looked for. Fresh arrivals during the last fortnight arose to about 3,000 cwts., whereas about 4,500 cwts. have been sold. —Gunsburg Brothers.

MANURES.

PRICE CURRENT OF GUANO, &c.

Peruvian Guano direct from the importers' stores, £12 5s. to £12 10s. per ton.

Bones, £6 Ditto Crushed, £6 10s. per ton.

Animal Charcoal (70 per cent. Phosphate) £5 per ton.

Coprolite, Cambridge, whole £2 10s., ground £3 to £3 2s. 6d. per ton.

Suffolk, whole £2 to £2 10s., ground £2 10s.

Nitrate of Soda, £12 5s. to £12 10s. per ton.

Gypsum, £1 10s. Superphosphates of Lime, £5 5s. to £6 5s. per ton.

Sulphuric Acid, concentrated 1·845 1d. per lb., brown 1·712 0¾d.

Blood Manure, £6 5s. to £7 10s. Dissolved Bones, £6 15s. per ton.

Linseed Cakes, best American barrel £11 5s. to £11 15s., bag £10 5s. to

Cotton Seed Cake, £5 to £5 15s. per ton.

E. Purser, London Manure Company,
116, Fenchurch Street, E.C.

	£	s.	d.		£	s.	d.
Guano, Peruvian	12	7	6	to	0	0	0
Do. Upper do.	6	15	0		7	0	0
Malden Island	0	0	0		0	0	0
Bone Ash	0	0	0		0	0	0
Brimstone, 2d&3rd	0	0	0		0	0	0
Saltpetre, Bengal, 2 per cent.	0	0	0		0	0	0
Nitr. of Soda, p. ct.	0	10	6		0	11	0
Cloverseed, N. Am. red, new per cwt.	2	5	0		2	10	0

Linseed Cake, per ton—	£	s.	d.		£	s.	d.
Americ., thin, bgs.	10	10	0	to	10	15	0
Do. in brls	0	0	0		0	0	0
English	11	0	0		11	10	0
Cotsd. Cake, decort.	0	0	0		0	0	0
Linsd. Bomby, p. qr.	3	10	0		0	0	0
Rapeseed, Guzerat	2	17	0		2	18	0
Niger	2	12	0		2	13	0
Tallow, 1st P.Y.C.	2	6	0		0	0	0
,, super. Norths	2	5	0		2	5	6

SAMUEL DOWNES and CO., General Brokers,
Exchange Court, Liverpool.

Agricultural Chemical Works, Stowmarket, Suffolk.

		£	s.	d.
Prentice's Cereal Manure for Corn Crops	per ton	5	10	0
Mangold Manure	,,	5	0	0
Prentice's Turnip Manure	,,	6	10	0
Prentice's Superphosphate of Lime	,,	0	0	0

END OF VOLUME LI.

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